

American Artisan

Founded 1888

The Warm Air Heating
and Sheet Metal Journal

Vol. 97, No. 17

CHICAGO, APRIL 27, 1929

\$2.00 Per Year

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Making Ideas With
Complete Plan For
Increasing Your
Business This Year

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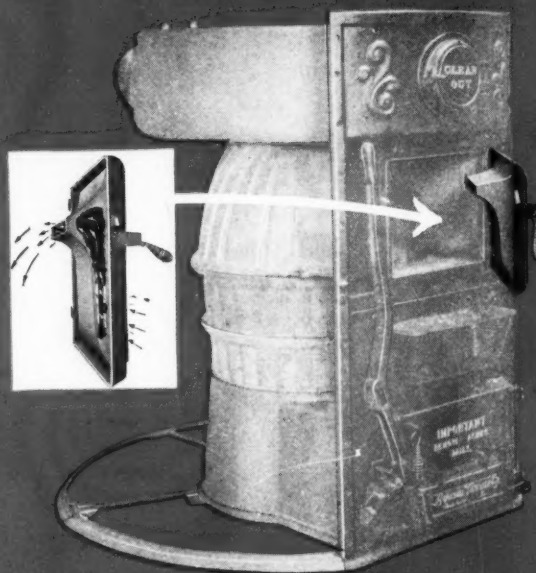
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IN this 1929 Model, Agricola has achieved a result long sought by furnace manufacturers: a furnace that is up to the minute in design and construction which is sold at a price made possible by production in tremendous quantity!

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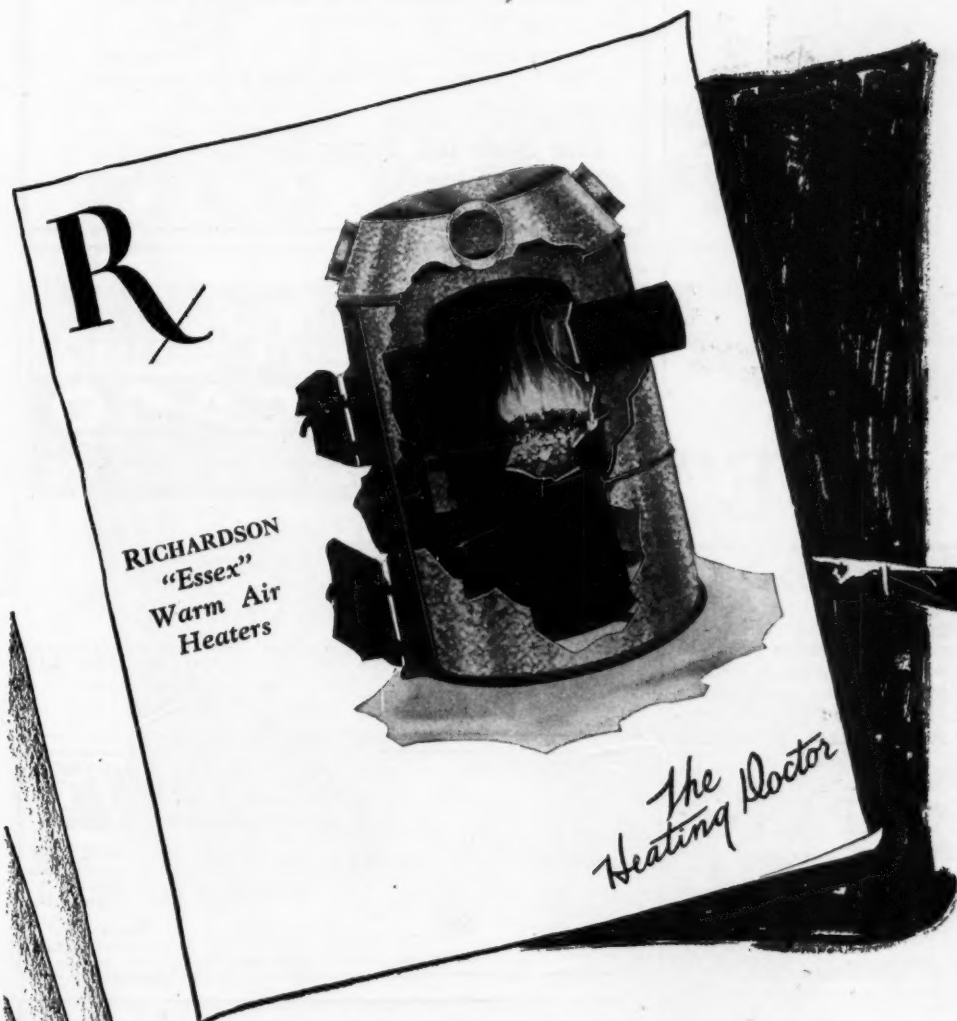
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THE modern heating man is like the modern doctor. He believes in *keeping* the system healthy—not in waiting until it has broken down entirely . . . It's up to you to look over *every* heating system in your territory right now. There are big profits—and less bother—in making repairs *before* the winter breakdowns come.

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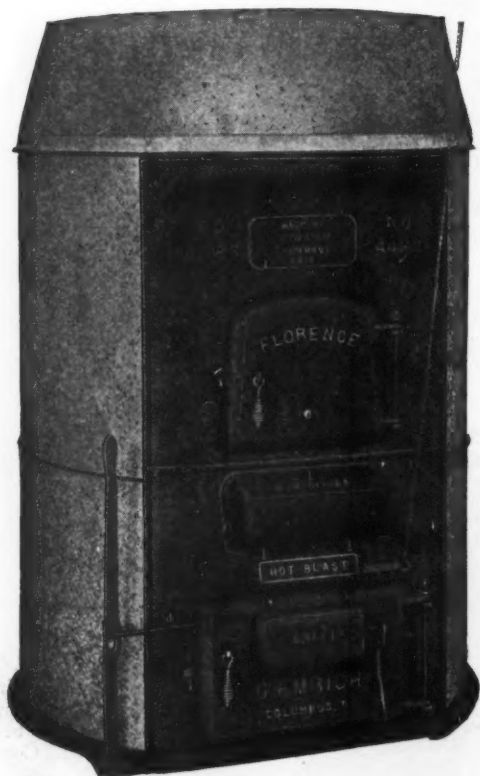
BOSTON
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CHICAGO
PROVIDENCE

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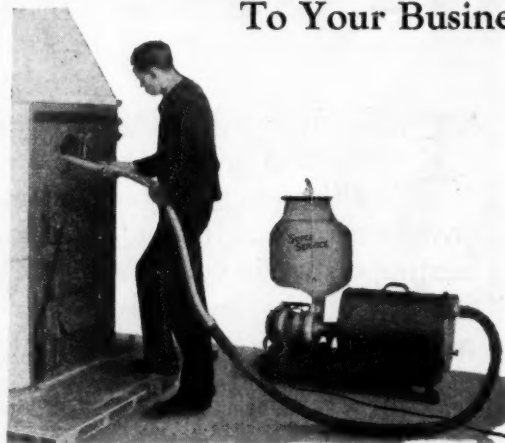
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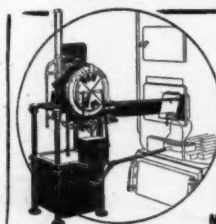
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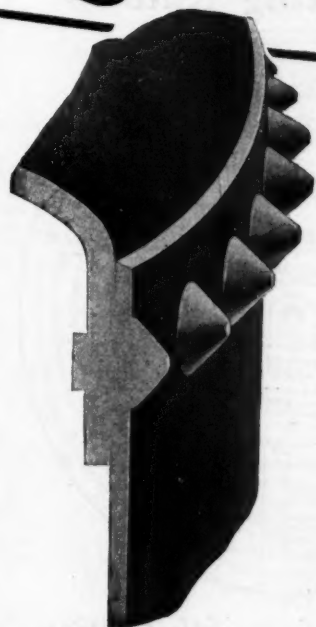
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Listed by Underwriters
Adaptable to warm-air furnaces because the McILVAINE System of continuous flame insures no cracking or burning of fire pots, but produces even, dependable heat.

Not an Intermittent Burner
DEALERS: Write for information today.
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IF you are in need of any tools or machines and you don't see them advertised or listed in the **BUYERS' DIRECTORY** write to the **NOTES AND QUERIES DEPT.** of American Artisan—we can tell you where to obtain any Sheet Metal Working Tools and Machines made.

Quality Is More Than Skin Deep in Furnaces!



The "Skin" of the "AFCO"
Furnace Is Heavy Boiler Plate
Steel... Riveted Gas Tight

All furnaces when cased up look much the same to the consumer, but they soon discover that outside appearances, like beauty, are only skin deep.

It takes quality to deliver heating results and there is no substitute. A clean furnace is impossible without gas tight construction. An economical furnace is impossible without maximum heating surface. A trouble free furnace is impossible unless it can stand forced firing without cracking.

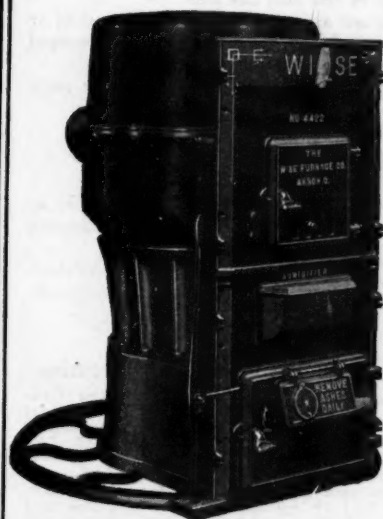
The "AFCO" Boiler Plate Furnace has withstood every conceivable kind of a quality test, successfully. It is the kind of quality you will be glad to recommend to your customers. Ask for a free copy of the "AFCO" catalog—it shows the way to bigger furnace profits.

The American Furnace Co., St. Louis
"AFCO" Boiler Plate Furnaces

—all your purchases from one source

WISE FURNACES

BELOW is shown the New Wise Steel Furnace. A Wise product and a steel furnace having exclusive Wise features. Notice the Cast Iron Soot Box and Clean-Out on bottom of Radiator—the weak spot of steel furnaces eliminated.



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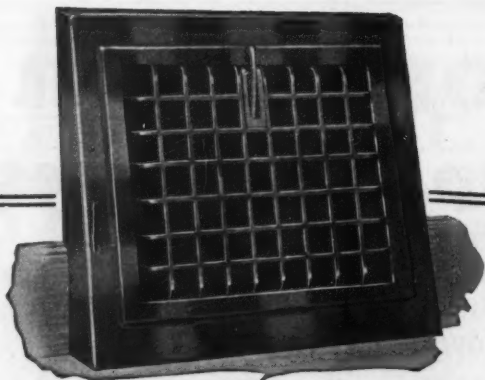


Write for catalog No. 23



THE Wise 20 Series Return Flue Radiator has a new Patented radiator. Now cleaning the radiator is easy. The feed chamber and the radiator are designed so that the fire flues are easily gotten at from the upper feed door with the soot falling directly into the firepot. Also equipped with the new Cellular Firepot.

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of all registers, combining air capacity, decorative and concealing features.

Designed to conform with the Standard Code so they fit all standard boxes.

Auer Patented mechanical features make it perfect in operation,—quick and easy to install.

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STOVE PATTERNS
QUINCY PATTERN COMPANY
QUINCY, ILLINOIS

The STANDARD CODE Computing Rule



Adapted from Article Three **5th Edition**
of the
STANDARD CODE
MARCH 1, 1928
Simple to Operate

THE Computing Rule is not a novelty, but, a well designed mathematical device, for figuring leader pipe and register areas for warm air heating systems. It has proven its accuracy in estimating and has passed the experimental stage. It is operated similar to an Engineer's slide rule.

The complete instructions are easily understood. You can learn to operate the Rule in less than one hour.

Results can be had without a single *Division, Multiplication or Addition* problem, as required in Article Three of the Standard Code. Not a chance for a mathematical error.

"Remember, you do not have to refer to a lot of loose parts or awkward tables."

Simplifies accurate estimating.

Handy Pocket Size

RULES are $5\frac{1}{2}$ inches in diameter— $\frac{1}{8}$ inch thick. Has an upper and lower revolving disc with a hairline indicating arm.

It is made of extra heavy and specially prepared celluloid, which reduces shrinkage and warping to a minimum. It is washable and unbreakable.

Can be carried comfortably in your pocket.

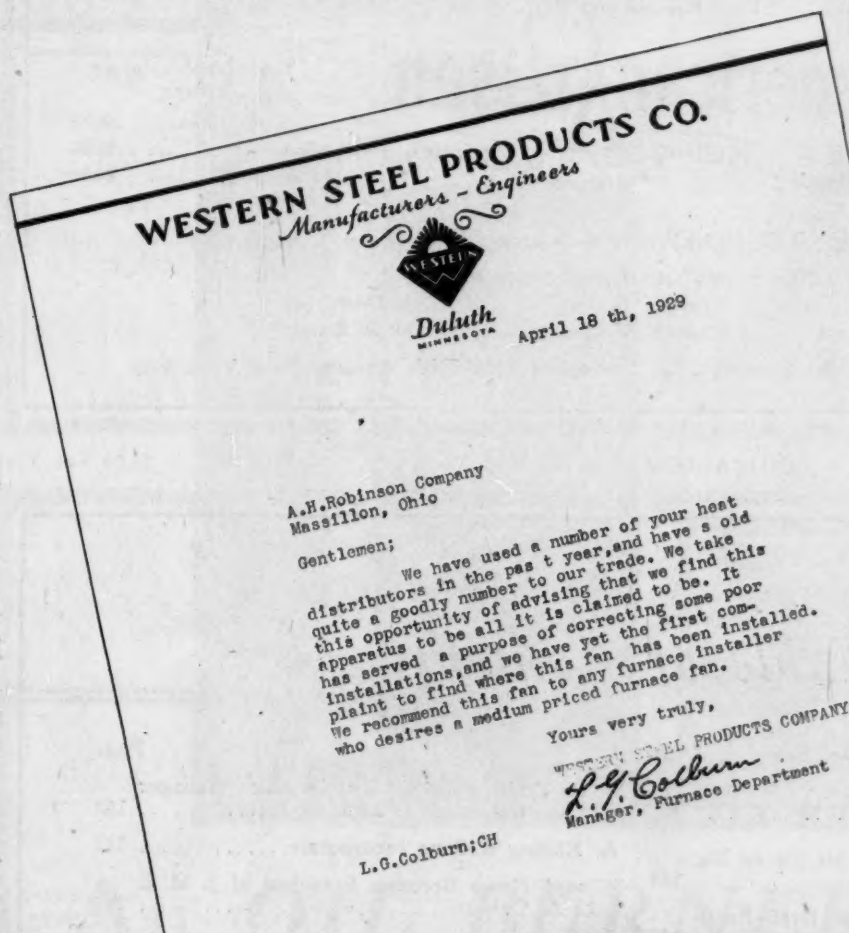
Here Is What The Computing Rule Will Determine:

- 1 The warm air pipe and register areas for First, Second and Third floor rooms.
- 2 The areas necessary for 70° inside temperature when the outside temperatures are ZERO, 10, 20 and 30 degrees ABOVE or BELOW zero.
- 3 The areas from the Contents, Glass, Wall, Roof and Ceiling. The factors as covered in Table "A" are represented in accurate form.
- 4 The areas for rooms having One, One and One-half and Two air changes per hour.
- 5 The Unusual Exposure requirements as the 10% for East and West and 15% for Northeast, North and Northwest rooms.

"Absolute Correct Results"

Price, \$3.00—Postpaid
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Prominent Furnace Manufacturer recommends and sells the ROBINSON Heat Distributor

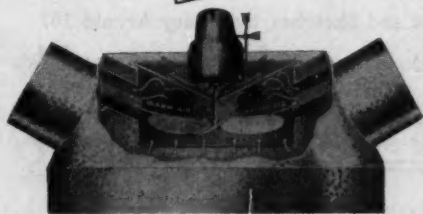


THE boys who install warm air heating systems up around Duluth have to engineer jobs that will heat satisfactorily in very cold weather.

Mr. Colburn says the Robinson Heat Distributor is doing good work and that means it is successful in a region where it must undergo its most severe test.

Ask your jobber for full details on the Robinson Heat Distributor.

FURNACE showroom of the Western Steel Products Co., Duluth, Minn. Notice the prominent location given the Robinson Heat Distributor which is displayed installed in a Western Steel Furnace.



ROBINSON
Heat Distributor

Mfg. by The A. H. ROBINSON CO., MASSILLON, OHIO

Recommended and sold by these reliable jobbers—Ask the one nearest you for details

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DAYTON-HESSLER CO., Syracuse, N. Y.
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FARRIS FURNACE CO., Springfield, Ill.
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LENNOX FURNACE CO., Inc., Syracuse, N.Y.
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THE SCHILL BROS. CO., Crestline, O.
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When writing mention AMERICAN ARTISAN—Thank you!



Founded 1880

Published to Promote
Better
Warm Air Heating
and
Sheet Metal Work

American Artisan

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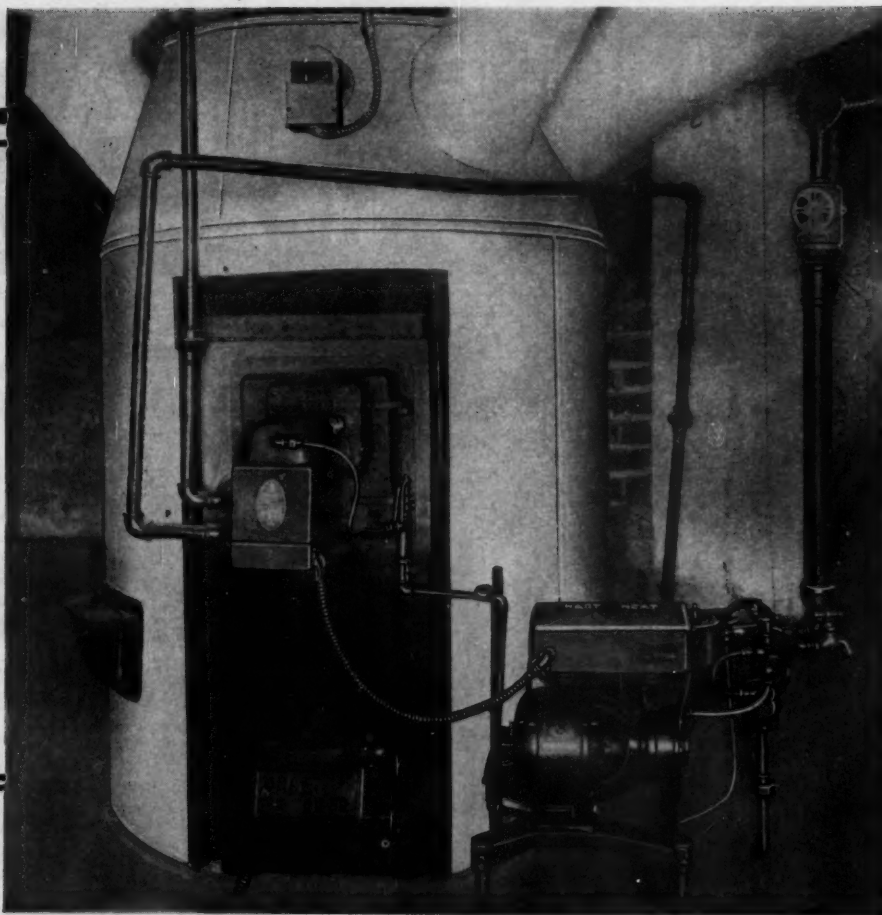
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JOY IN LIFE DEFINED

A great deal of the joy of life consists in doing perfectly, or at least to the best of one's ability, everything which he attempts to do.

There is a sense of satisfaction, a pride in surveying such a work—a work which is rounded, full, exact, complete in all its parts—which the superficial man, who leaves his work in a slovenly, slipshod, half-finished condition, can never know.

It is this conscientious completeness which turns work into art. The smallest thing, well done, becomes artistic.—William Mathews.



An OIL BURNER for the Warm Air Furnace

Preferred-Hart type D-O units open the sales door to scores of good prospects for you. It is especially designed for the warm air furnace trade. With our exceedingly liberal selling franchise and sales helps you can make good profits on these two fast-selling models.


- 1 Retail selling prices acceptable to all your trade.
- 2 Economical in operation as they burn low - grade fuel oil (Pacific Coast Diesel, 25 degree Baume).
- 3 Simplicity of installation—nozzles are installed through the fire door; only four bolts used to attach; grates are left in place.
- 4 Designed for warm air furnaces. Quiet, economical, odorless.

**HART
OIL
HEAT**

larger Preferred - Hart models. Vacuum tank, vacuum feed, electrical ignition, flue thermostat, safety switch, drain-back trap and under-

writers' approval are only a few of their attractive selling features.

We suggest you write us for facts in which you will be intensely interested.

PREFERRED OIL BURNERS, Inc.
PEORIA - - - ILLINOIS 

The two Preferred-Hart type matches in appearance, engineering achievement, steady operation and fuel economy the eight

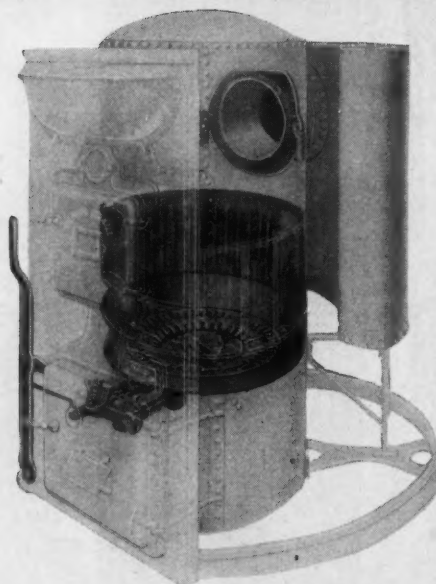
Preferred Oil Burners, Inc., is a national, far-reaching institution, already 7 years old. A half million dollar concern with high-grade credit. A charter member of the Oil Heating Institute. The complete Preferred-Hart line includes 10 models for domestic, commercial and industrial installations.

**The
Highest
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Steel
Furnace
Made**

DUPLEX GRATES

• BALL BEARING •

Not
just
a
shaker
handle
but
truly
easy
and
efficient
grate
operation



THIS is something out of the ordinary in steel furnaces. Weir not only made costly changes to supply a lever shaker but did the job in true Weir style by developing the highest type of grate operation.

The shaker handle in the Weir is not just a selling feature—your customers get what they want—the height of convenience with these Duplex Ball-Bearing Grates. Like every other part of the Weir these new grates are heavier, stronger and built to give extra long service. Moreover, ashes are shaken down from the outside of the fire, permitting the patented WEIR Gas and Soot Consuming Firepot to operate most efficiently.

Weir has also developed and is now furnishing an entirely new style 4-Bar Type Grate.

Just ask us to tell you all
about the New Weir Grates.

The Weir Book of Facts is yours for the asking—write today for your copy.

**THE MEYER FURNACE CO.
PEORIA-ILLINOIS**

**The
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Steel Furnace
Now In Its
Forty-Seventh
Year**

WEIR

**Made by
The Founders
of the
Steel
Furnace
Industry**

Mention AMERICAN ARTISAN in your reply—Thank you!



American Artisan

The Warm Air Heating and Sheet Metal Journal



Vol. 97

CHICAGO, APRIL 27, 1929

No. 17

Warm Air Heating Given Boost in Reading Columns of World's Greatest Newspaper

System Works on Lines of Heart Action, Says Homer Grant

AT last warm air heating has found a champion, in the Chicago area at least, whose activities are bound to popularize that type of heating unit and give it the "break" it has so long deserved. The agency back of the movement is not yet ready to proclaim its identity, but this will become known in the very near future when it will enlist the services of the radio broadcast in its work of educating the public to a better understanding an appreciation of warm air heating than has been had at any time in the past.

A specimen of the work which this agency is doing appeared in the architectural section of the Chicago Tribune under date of Sunday, April 21. The article itself, which appears hereinafter, was written by Homer Grant of the Tribune staff:

Mechanical Way to Provide Home With Fresh Air

"There have been big strides made in modern warm air heating systems in the last few years and one of the most important of these is the 'supercirculation' development by which air is moved by a mechanical propeller instead of gravity. This results, according to recent tests, in a complete change of air several times an hour.

"Air motion, as every one knows, is important to health, comfort and skin wholesomeness. Moving air carries away excess body heat quickly enough to keep a person from feeling dozey, oppressed or developing a fever.

Woman Is Sufferer

"Many times it is the woman in the home who is discriminated against in the kind of air she is

Sales resistance in the warm air heating industry is going to be considerably lessened when the public becomes thoroughly informed on what the warm air heating industry has done in the way of research work during the past ten years.

Therefore it is up to everyone in that industry to do as much of the missionary work as possible. In the doing of it, however, great care should be exercised to see that the public gets nothing but the true facts in the case. Growth will be slow at first, but as it proceeds it will gather momentum sufficient to carry it to heights as yet undreamed of.

forced to breathe. The average house is not equipped with ventilating air apparatus, such as theaters and auditoriums, hotels, many factories and schools possess.

"Direct drafts from open windows or doors, or air leakage around closed windows and doors are about the only fresh air supply in the average small home. Therefore, this home mistress suffers many times from headache, strained nerves, lack of "pep" and general lassitude.

Purified by Heat

"Recirculation is a recognized principle in the ventilation of the-

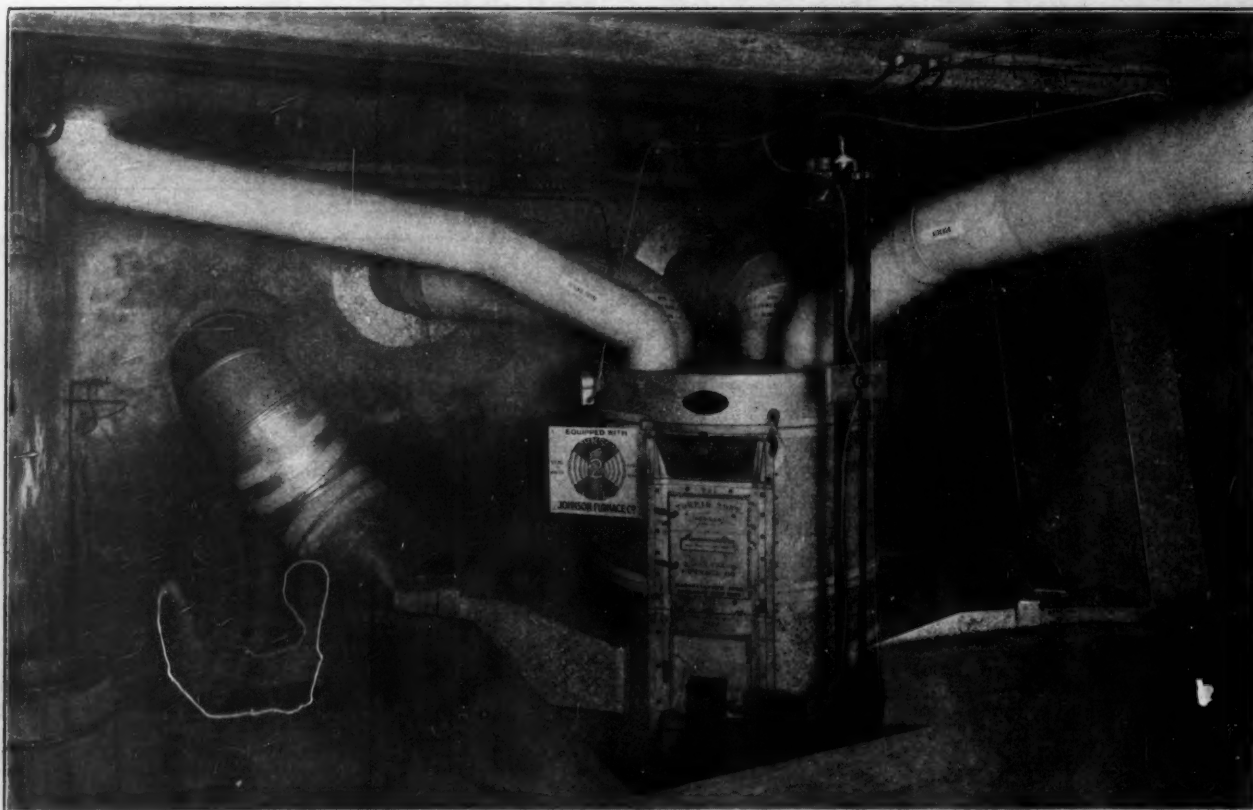
aters and schools and big buildings of various kinds. Working like blood circulation in the body, the air in the living rooms of a home, heated by the supercirculating systems, is drawn through cold air returns to the central heating plant, where it is purified by the intense heat inside the casing and then is recirculated through the living rooms.

"More and more the home heating plant must become a complete air conditioning apparatus, providing comfortable circulation and humidity as well as comfortable heat. Hence the importance and value of the supercirculation development of the modern warm air heating systems and the reason for the interest it is focussing upon itself."

AMERICAN ARTISAN has upon numerous occasions pointed out the value of this type of activity to popularize warm air heating. As recently as April 6, 1929, an article appeared calling attention to the work of a nature designed to strengthen the weak points of competitive heating systems being carried on by industries in direct competition with the warm air heating industry.

Therefore it is with a great deal of satisfaction that we note an awakening of agencies in the warm air heating industry to the wonderful possibilities for constructive educational work through avenues of greatest potentiality for good. Once the warm air heating industry gen-

(Continued on Page 164)



Basement View of Heating System Installed in the Red Bridge Farm Country Home of Bryce Smith, Near Kansas City, Missouri. The Furnace Is Lowered 18 Inches in Solid Rock to Permit Plenty of Head Room

Sells Natural Gas-Fired Warm Air Job on Big Country Estate for \$800

Lowers Furnace 18 Inches Below Basement Floor to Get Head Room

SELLING warm air heating is a merchandising proposition pure and simple. And those furnace installers who are attacking their sales problems from that angle are reaping the benefit of profits that come from the bigger than average installation.

Owners of large homes can be interested in warm air heating if they are approached in the proper manner. Guy Johnson, president of the Johnson Furnace Company, Kansas City, Missouri, has proved this by selling a gas-fired warm air furnace installation to Bryce Smith for the latter's Red Bridge Farm country home, recently erected on a 250-acre estate near Kansas City. The Johnson Furnace Company is to be congratulated on the appearance of this job.

Mr. Smith is a very important personage in his community. He is the active head of a group of bakeries in Kansas City and is a member of the Kansas City School Board. Consequently the people he is going to entertain on his estate are people who do their own thinking. The Johnson Furnace Company put over a master stroke of sales diplomacy when they got warm air specified in this home. They have already received a large amount of advertising from this installation. Not only that, but Mr. Smith is now beginning the construction of a second modern dwelling in English architecture and a warm air heating plant similar to the one shown in the illustration will be installed.

In addition to being interesting

from the sales standpoint, this installation has many instructive features for the installer who is anxious to enlarge his scope of knowledge on good installation practice.

In almost everyone of his talks before warm air furnace installers, Jack Stowell, special representative of the National Warm Air Heating Association, stressed the necessity for having an air space surrounding warm air ducts that pass through a stone or brick wall in the basement.

One of the accompanying illustrations of the dwelling on the Bryce Smith estate near Kansas City, Missouri, shows an excellent view of the warm air furnace installation in the basement.

In this installation we see a demonstration of the principle advocated by Jack Stowell. Two of the warm

air ducts go through the stone wall on the farther end of the basement. The holes themselves were drilled with an air drill to get a clean-cut job. The air space was packed with insulating material and a collar as is shown was used. The one cold air which passes through the stone wall is, of course, cemented into place to make as neat an appearance as possible.

At a recent meeting of the dealers of Premier Warm Air Heater Company, Dowagiac, Michigan, Al Kundee, heating engineer, in a lecture of proper practice in furnace installation, stressed the advisability of taking the warm air from the outside ring where these are taken off the top of the bonnet. It will be noted in this installation shown that the Johnson Furnace Company has done that very thing.

Mr. Kundee also advised making the pipes all come to the same elevation before inserting the elbows and this practice has also been fairly well followed. One other thing in this connection which Mr. Kundee recommended was the insertion of a cone on the inside of the bonnet where said bonnet is flat. It is not known whether this practice was followed, but there is little doubt that the installers followed good practice throughout.

An unusual feature of this installation is the fact that it is lowered 18 inches into the solid rock. Of course one factor which made this possible that is not ordinarily encountered is that the furnace is equipped to burn natural gas, piped from the wells on the estate. The gas-burning equipment and piping can be seen in the basement illustration.

The system is equipped with a 48-29 Torrid Zone furnace and two No. 500 Miles automatic fans. There are four 16-inch warm air runs taken from the bonnet. The selling price ran to \$790.

Gray Brothers, Plano, Illinois, Have New Draft Regulator

A new device of interest to every heating contractor has just been brought out.

If you, as a heating contractor, would install a draft indicator on the heating plant of one of your customers and then sit down to watch it for several hours, you would probably be surprised at how much draft variation there really is and you would realize what the effects of this great difference would have on the fire itself. You could overcome these quick changes by manipulating the draft damper by hand, but you wouldn't like the job.

To make such a job automatic, Gray Brothers, Inc., are selling the

Automatic draft regulation of this kind is of particular importance in connection with oil burners and is very important with the gravity type burner, the operation of which is so dependent on the maintenance of proper draft.

Mrs. W. J. Bowers Says Some National Sheet Metal Auxiliary Members Are in Arrears

"Please pay your dues," says Mrs. W. J. Bowers, 1212 West Houston



The Dwelling Itself on the Red Bridge Farm of Bryce Smith, Near Kansas City. The Warm Air Heating Installation Was Made by the Johnson Furnace Company of Kansas City, Missouri

Staley Automatic Draft Regulator. This device, which is made of aluminum, operates on the balance principle and is so designed that it will maintain a uniform draft on your fire at all times by admitting more or less air from the basement to the smoke pipe, between the chimney and the furnace.

The greatest value of such a device is, of course, as a fuel saver. It does the work of a hand operated check damper, automatically and efficiently. It has merit also, because it will prevent overfiring,



New Draft Regulator

which often injures the heating plant and causes so many chimney fires.

Street, San Antonio, Texas, treasurer of the Women's Auxiliary to the National Association of Sheet Metal Contractors. "There are still some women who have not yet paid their dues and as I intend to close my books on June 1st, I am asking you to insert a notice to the effect that I would like all those women who have not paid to send in their checks before the 1st of June.

"San Antonio Auxiliary is doing very nicely. I made an official visit to Houston recently and called a meeting at the Hotel Cotten that night. We had a nice crowd out, with good results. Ice cream and cake was served by Mrs. W. R. Etie, President; Mrs. Zay Smith, Secretary, and Mrs. Agnes Bender, all of the Houston Auxiliary. I urged all present to attend both the state and the national conventions."

Mrs. Bowers was presented with a beautiful bouquet of flowers by Mrs. Bender on behalf of the Houston local.

What Good Is Derived from Keeping Records of Your Daily Business?

Why Should You Be Bothered About Cost Accounting and the Like?

By J. G. DINGLE, C. P. A., Ottawa, Illinois*

IN my previous appearances before your convention, I stressed the benefits to be had from good records. I attempted to show by comparison the close relationship of your business to that of your competitor. I attempted to bring home to you the necessity of knowing your costs in order that you may be fair to yourself, your competitor, and to your customer. Each member of your industry should consider seriously the fact that the sheet metal industry is but the combined efforts of the individual men in the industry and that the public judges the industry by the acts of the individuals engaged in it.

My efforts today will be devoted to an attempt to bring home to you a clear understanding of the "Why" and "How" of bookkeeping.

Bookkeeping Gives Rise to Confusion

There is, I believe, no subject so vital to the success of one's business as is the record-keeping, or bookkeeping. Nor is there a subject on which the average business man is so confused.

The sheet metal worker will admit that his work is of a special nature; that one must have certain training, certain experience, before he can expect to lay properly out and install a furnace. There is not a man here who would go to a business college, or an employment agency, and hire a bookkeeper, and send that bookkeeper out to lay out and install a furnace. You would say that bookkeeper knows nothing about a furnace except, possibly, how to fire it.

But let's take the bookkeeper's

side of the case. You, a sheet metal contractor, whose early training was perhaps as a workman for some other sheet metal contractor, have become the employer of a bookkeeper. You, being the boss, naturally feel that as it is your business, you know more about it than anyone else, and particularly more than the bookkeeper. You tell him or her how to keep the books, and what to do. Of course, being the boss, that is your privilege, but how do you qualify for the job. What do you know about bookkeeping, as compared with that bookkeeper, who has studied bookkeeping, and, possibly, kept a few sets of books?

To continue this argument, your customer is your boss, in that he is the man who hires you and who pays you. Do you let him tell you how to do your work in its minutest detail? Certainly not, for you are a specialist in your line and soon tell him that your experience qualifies you to do better work for him than if you follow his instructions.

In my public practice, as well as my experience in the business world for many years prior to taking up the public work, I have had the pleasure of seeing and experiencing the business man at work on his records. It has been my privilege to study this condition and aid in some small way a great many men who were willing to see the light.

There is one great obstacle to be overcome. Being the boss, one does not like to admit to an employee that perhaps the employee knows more about the books than he does. It is my personal opinion that the bookkeeper soon finds out how little the boss knows about bookkeeping, and while the boss may think he is fooling the bookkeeper, he is not. Why not come clean and admit your

shortcoming in the specialized field of bookkeeping and let the bookkeeper help you to understand the aim and purpose of the books?

What Should Your Books Tell You?

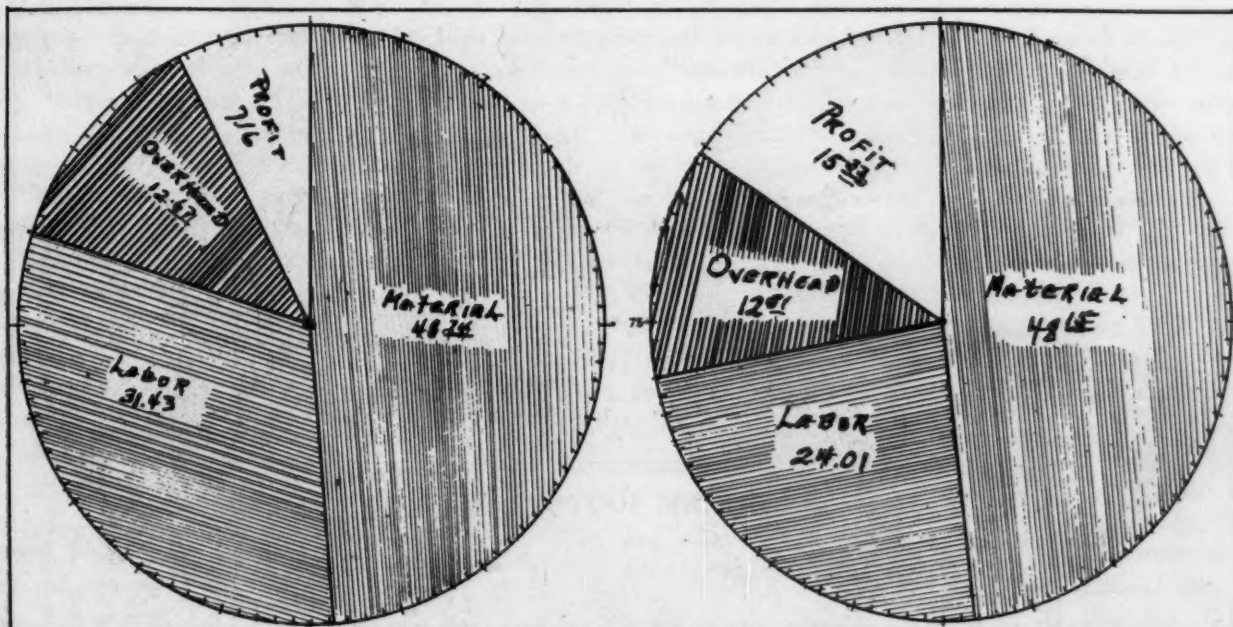
You will say that bookkeeping is too deep; or, possibly, you are one of those men who know all about bookkeeping. Let us look into this matter from a common sense point of view and see just what a set of books should do.

First, we must take the business to pieces and see what it is. Business may be defined as "A Live, Active and Ever-changing Organization." Did you ever stop to consider the rapidity with which money values move around in your business. I hardly think so. You are like most business men, I fear.

I recall an instance where a client of mine was all wrought up over the fact that a fifty-cent piece had been allowed to remain on the bookkeeper's desk all day. He was sure something was wrong; that she was possibly thinking of appropriating his money. I had just come in from the factory, and noted a piece of material, worth several dollars, on the floor of the factory, where it was being tramped on and ruined. My reply to that business man was that the fifty-cent piece was no more to that bookkeeper than an invoice, or a time sheet—merely a part of the records, and, in time, would be placed in the proper place.

I then took him out to the factory and showed him that piece of material, worth the several dollars and asked him if he realized that here he was actually losing money through the destruction of value of that material, while in the case of the fifty-cent piece, his property was not being destroyed nor lost. He

*Address delivered at the convention of the Illinois Sheet Metal Contractors' Association, held in Peoria, Illinois, April 16 to 18, 1929.



Figures 1 and 2

then saw the light and realized for the first time, perhaps, that his money was not only in actual "coin of the realm" but also in other kinds of property.

Understand Your Obligation to Fellow Man

You may say that you are in business for the purpose of making a living and having something to occupy your time. You also may have a desire to serve your fellow men. You should also realize that you have an obligation to your fellow men, your customers as well as your competitors, your employees as well as your family. To start a business, one usually hires a few men, rents a building, installs certain equipment and fixtures, and a stock of goods. Then starts the rapid changing of values.

You immediately find your capital being placed in labor, rent, materials, and expenses of all kinds. It is the object of the books and the bookkeeper to record these ever-changing conditions relating to your capital in such a way as to enable you to protect your investment, collect from the customers a proper amount for the services rendered, and intelligently operate your business. Off-hand, you would say that you know how to figure your costs, and know that you are making money out of your business.

I would enjoy having a heart to heart talk with every man in this convention on the subject of his costs, for I am sure he would be quite certain as to his ability to properly price a piece of work, and would know that he was making a profit. I am quite sure he would be willing to admit, however, that he had failed to determine his exact costs after having considered all the expense elements which enter into every place of work he does.

He can readily see the material and the direct labor which goes into a job. He cannot, however, see what proportion of his rent, lights, advertising, office expense, taxes, insurance, indirect labor, delivery expense, and many other expense items should be charged to the job. It is these "Overhead" expenses that are the hardest to compute without a properly designed and operated set of books.

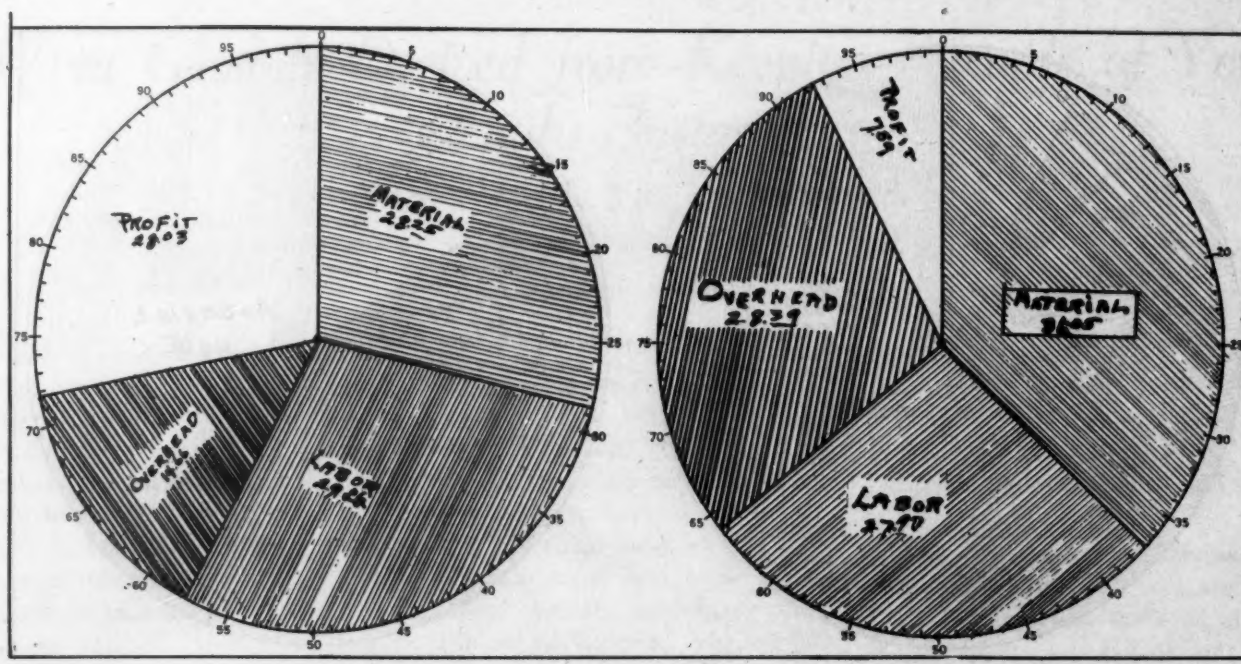
Some of the Leaks That Reduce Profits

I had one experience in a large factory, manufacturing machine tools, which clearly indicates the point I wish to make. A five-year audit was being completed, and as a matter of usual routine, I was having a general discussion of the business with the president of the company. Among other things, I asked this president if he was satis-

fied with his cost data, and he replied that he was. He did, however, suggest that I talk with the vice-president in charge of production, to see if that gentleman had any questions. Upon opening the matter with the vice-president, he stated that the cost system was perfect; that they were figuring a margin of 25 per cent net profit on their work, and that everything was coming out fine.

He was but little upset when I told him the general books did not bear out his statement that they were making 25 per cent net profit on their sales. In fact, their gross profits for the several years had been steadily declining, and the year just closed showed something like 6 per cent net profit.

A trip through the factory was proposed, and some interesting things were discovered. At the receiving clerk's desk, we found a receiving ticket which read somewhat as follows: "Received from Blank Company one box." Investigation of that "box" disclosed the fact that while it was a small one, it contained fine tools worth several hundred dollars, and if the company from whom the tools were purchased has failed to put in the required tools, or they had been stolen en route to this plant, the company would have paid for them and never received them.



Figures 3 and 4

A little further along, one of the machinists approached the vice-president and asked him if he knew what had happened to a bronze casting, weighing a couple of hundred pounds. The vice-president replied that the casting was placed on the floor of the receiving room the evening before and should be there. Investigation revealed the fact that that casting, worth quite a large sum of money, had been stolen during the night.

Their cost records would have shown there was but one of these castings required for the completed machine, thus the fact that this first casting was stolen would not have served to increase the cost of the machine. This casting was a loss not accounted for in the cost records. It did, however, serve to reduce profits. It was paid for but never charged to a customer.

Why Adequate Records Are Necessary

Let us follow, step by step, your money as it races through your place of business. You purchase materials on open account. Your bookkeeper records the fact that you own certain materials and owe the supply house. Your employes are at work, and you will have to pay them at the end of the week. It is up to the bookkeeper to know that the time for which you will pay these men

at the end of the week is charged to the proper customer.

These two items are the easiest of all of your cost. You pay a certain price for the material and sell it at a higher price, presumably. You pay your men a certain rate per hour, and charge your customers a higher rate.

Are you sure you are selling all the time you buy? If not, how do you know you are breaking out on the men? Suppose you pay your men \$1.00 per hour for nine hours and charge the customer \$1.50 per hour for six hours. You pay out \$9.00 to your men and charge the customer \$9.00. You break even, while, off-hand, you would say you were making a good profit on your labor. Who pays for the three lost hours—nine minus six billed the customer? At the same time you are selling material and direct labor, you should be selling to each customer, as a part of the cost of his work, a proper proportion of your rent, office expenses, delivery expenses, indirect labor, and other "overhead" items.

There is but one way in which you can do this intelligently and that is to know what your "overhead" costs amount to in proportion to your material and direct labor costs. There is but one way to know what your overhead costs are and that is

to take the records of prior periods and analyze the results obtained. If your records, or books, covering these periods are poorly kept, the information is difficult to obtain and of little value when obtained on account of its possible inaccuracy.

Bookkeeping, then, would seem to be best explained to the layman as a method of sorting and classifying financial data pertaining to his business. We have seen that the capital of the business is in constant motion, changing its form at frequent periods, accumulating new and hardly recognizable values as the work progresses.

The design of a set of accounts to properly record these constantly changing forms of values should be such as would recognize the peculiar factors in that business. Accounts should be provided which will permit the bookkeeper to sort these transfers according to their several kinds, and group in proper accounts all historical and financial data pertaining to the business.

Everything pertaining to cash would be recorded in the cash account. All charges to the customer would be safeguarded and controlled by Accounts Receivable. Sales accounts would be the final resting place for all revenue from the sales of materials and labor. And to revamp the old saying, "Everything

that goes up must come down," in a bookkeeper's language, we would say, "Everything comes from some account and goes to another." If money is received, we charge cash and must credit some account to show the source of that money. If a customer is charged, we must credit some sales account.

Bookkeeping, then, becomes a task of keeping up with the "active and ever-changing organization" in such a way that the owner of the business will at all times be able to determine just where his capital, or money, lies. It is money, whether in the bank, in an account receivable, a furnace, or a job that has not yet been charged to the customer. Of course, you will say that you cannot spend it until you reduce it to cash. We say you cannot reduce it to cash unless you know who owes you the account, and what elements make up the account.

Taking the Sales Dollar Apart

Let us now look at some sales dollars and see how they vary. These are prepared from the figures used last year in my talk before this convention. How many of you men can take your sales dollar to pieces and determine how it rates with these dollars?

Sales Dollar No. 1. We find this dollar to contain 48.74c for material, 31.43c for labor, 12.67c for overhead, and 7.16c profit. The overhead here appears to be reasonable, but if in figuring your sales, you should add your material and

labor costs together and to the sum of these direct costs, and what you might call a fair margin for profit and overhead, you would have to add about 24.73 per cent.

Sales Dollar No. 2. This dollar is represented by 48.15c for material, 24.01c for labor, 12.51c for overhead and 15.33c profit. A much more profitable dollar than is No. 1. Here we find that the material and labor costs amount to 72.16c with the remaining 27.84c for profit

material represented by 36.05c, labor by 27.97c, overhead by 28.39c and profit by 7.59c. The material and labor costs amount to 64.02c and in order to obtain a selling price that will cover his overhead and yield him a profit of 7.59c, this man must add 56.20 per cent to the direct costs, or material and labor.

Sales Dollars Nos. 1 and 2 compare favorable as to final profit. Dollar No. 1 shows 7.16c, while Dollar No. 4 shows 7.59c. Yet, in

order to get his selling price from the direct, or material and labor, costs, Dollar No. 1 must add 24.73 per cent while Dollar No. 4 must add 56.20 per cent, or more than double the apparent profit, or markup, of Dollar No. 1.

These figures are submitted to show the wide variations in the different businesses in the same industry. As a matter of fact, it is my opinion that some of these wide differences may be attributed to the fact that each man has kept his books in his own

way, without regard to the fact that the figures might some day be used for comparison with the figures from some other fellow in his line of work. Even after allowing for this factor, it would be unwise and unsafe for any man in this convention to assume that because one of the illustrations above found it necessary to add 24.73 per cent of his material and labor costs in order to net 7.16 per cent profit, it would be safe to use the same

(Continued on Page 165)

THANK YOU! MR. NESBIT

814 North Doheny Drive,
Los Angeles, California, April 13, 1929.

AMERICAN ARTISAN,
620 So. Michigan Ave.
Chicago, Ills.
Attention Geo. Duerr,
Dear Mr. Duerr:

I want to compliment you on the work you are doing so well along the lines of scientific merchandising, as displayed on page 14 in the April 6th issue of AMERICAN ARTISAN; also in the articles on pages 11 and 16. All these articles are good. You have also had many along this same line during the past year.

If all furnace manufacturers would add \$2.00 to the price of each furnace and spend this money for the right kind of publicity for one year, after that they could add several dollars to each furnace and sell twice as many as they are now selling, and every one connected with the business would make more money.

*Hoping you will keep up the good work, I am
Yours very truly,*

F. L. NESBIT.

* * *

Everyone in the warm air heating industry knows the deep understanding of the warm air heating industry's problems that Mr. Nesbit has and particularly the strenuous efforts he put forth as a member of the Western Warm Air Furnace & Supply Association (page the shades of Harry Hussie) to better conditions in that industry; therefore his words of compliment to me on what AMERICAN ARTISAN is trying to do are indeed words of real encouragement and make us believe that we are on the right track.

It must indeed be a source of great satisfaction to Mr. Nesbit and all that group of brave souls who constituted the membership of the Western, whose thought, courage and actions had such a far-reaching effect in making possible the Standard Furnace Code, to view their work and to know now that that work was not in vain.—THE EDITOR.

and overhead. The percentage to be added to the materials and labor costs to obtain the selling price here should be 38.58 per cent.

Sales Dollar No. 3. This dollar represents 28.25c for material, 29.06c for labor, 14.66c for overhead and 28.03c for profit. This is the most profitable dollar of the lot, and we find that this man, to accomplish this result adds to the material and labor costs 74.49c to obtain his selling price.

Sales Dollar No. 4. Here we find

Constructing Pattern for Tangent Tee by the Scalene Cone Method

*In Response to Inquiry from
Harry A. Bailey, Newark, Ohio*

By O. W. KOTHE, Principal, St. Louis Technical Institute

RESPONDING to the inquiry of Harry A. Bailey, Newark, Ohio, for the layout of a tee placed tangent to a main, the following drawing gives one method of doing it. In this case we use the scalene cone principle, where the true

lengths are developed and then we use an apex for describing the arcs. Strict triangulation may also be applied, and is more for the larger-sized work.

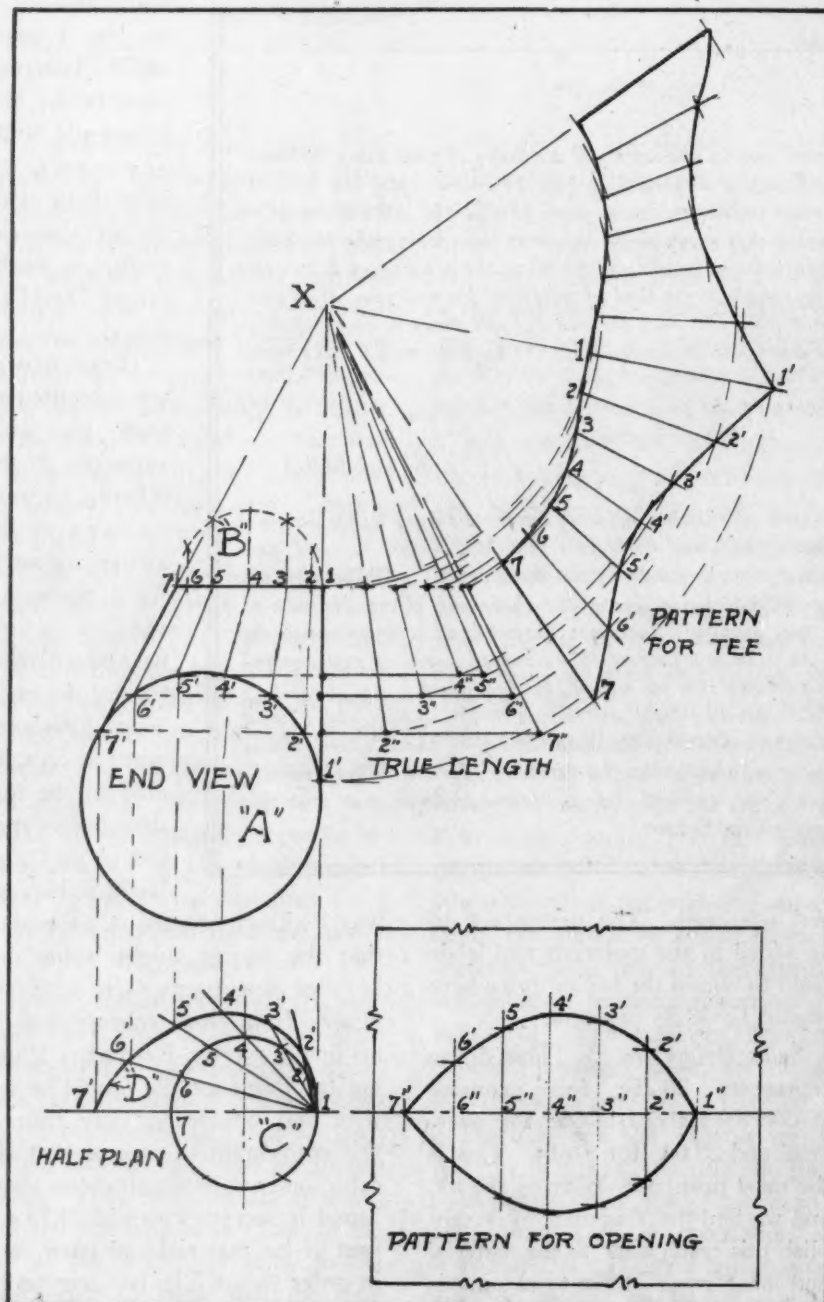
So first draw the end view, with section "A" of main, and then

square up the tangent line 1'-X, and measure height of tee as 1'-1, and draw 1-7 to its desired diameter. This enables drawing the side line X-7-7', after which the section "B" is described, and spaced in equal parts, and lines squared down to the case 1-7. Then from these new points and X as center, radiate them until the line intersects the section "A" in points 2'-3'-4', etc. From each of these new points in "A" pass over horizontal lines to act as base lines for true lengths.

Next develop the part plan, describing the section "C" to correspond with section "B," with all of its points. Then through points 2-3-4-5-6 of "C" draw radial lines from 1, since this is the apex of X of elevation. Then from each point in "A," as 2'-3'-4', etc., drop lines to cross radial lines of similar number, which gives points 2'-3'-4', etc., of plan. Sketch a line through these points and you have the miter line as the tee will intersect the main pipe. The plan lines as 2-2', 3-3', 4-4', 5-5', 6-6' and 7-7' will be the base lines for true lengths, and are picked and set on the proper altitudinal, over from 1'-1 of elevation. This establishes points 2"-3"-4"-5"-6"-7", and enables drawing the true lengths to X. By extending the top base line we cut off the true lengths for the top base.

So that in developing the pattern we use X as center, and each of the points at the top of true lengths we describe the arcs. We pick the girth space from "B" and starting on arc 1 in pattern we walk from one arc to another, so we mark points 2-3-4-5-6-7 of the top base in pattern. Through these points we pass radial lines from X and then describe the points 2'-3'-4', etc., into pattern,

(Continued on Page 164)



Patterns for Tangent Tee.

Estimating Material Necessary for Construction of a Motion Picture Operator's Booth

Materials Used for Elbows for Smoke Pipe and Boiler Breeching

By J. E. ALLSTEADT, Superintendent Mit-Shel Stamping Mfg. Co.

OUR problem for discussion in this article is a moving picture machine booth, which, it must be remembered, has to comply with certain rigid rules and regulations of the Fire Underwriters.

The frame work, as shown in

that 20 ft. is the shortest standard stock length for angle bars, and also the waste material that will occur in cutting, as the regulations are very rigid in not allowing a splice in the frame.

The length of the structure being

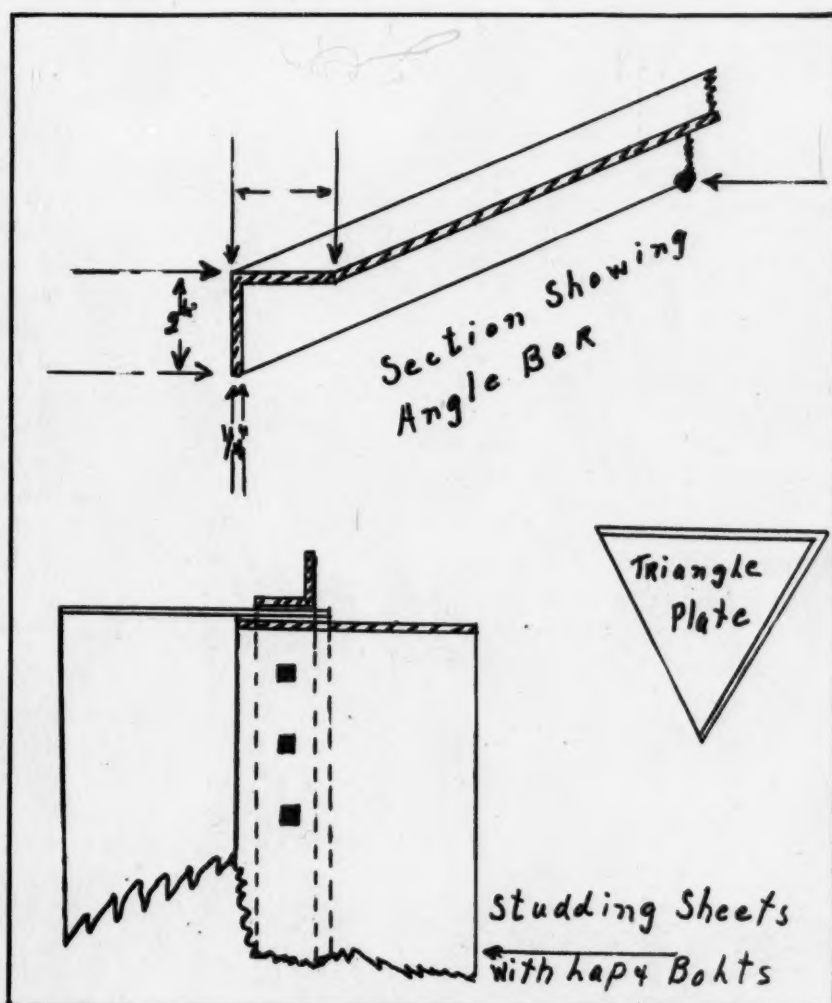
The studding in this case being seven feet long, it will require twenty pieces seven feet long, and the stock length that will give the least waste is twenty-two feet, so it will require seven twenty-two foot bars to produce the studding.

The specifications also usually require an angle bar door two feet wide by six feet high, made out of $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in. by $\frac{1}{8}$ in. angle. This will take one bar 20 ft. long. The estimator should keep in mind that any length bar over 22 ft. in length takes a higher freight rate, so it is policy wherever possible to use the standard 20 ft. and 22 ft. lengths.

It is usually specified that the studding and top supports have a heavy steel triangular plate of about 14-gauge galvanized steel attached at each end, as shown in Sketch B, and secured by bolts to the top and bottom angles or plates. The framework is usually bolted together for ease in assembling on the job, and as these bolts placed two inches apart on the studding, it will require nearly 1,000 bolts.

Twenty gauge galvanized steel sheets are required to cover sides and top, and all seams must overlap and bolt to the studding and top supports, the lap to be spaced at each studding. The structure being seven feet high, the stock sheet to use is the 26 in. by 96 in. size. With a covering surface of 24 in. it will require 27 of these sheets to cover sides, top and door, and to take care of the overlaps at top.

A ventilator shaft, ten or twelve inches in diameter is placed in the top, as a protection to the operator and in case of fire. The door is hung upon three or more hinges, and arranged so it can be locked and closes automatically the necessary openings with sliding doors in the



Sketch A. Type of Angle Bar Used in Constructing Moving Picture Machine Booth

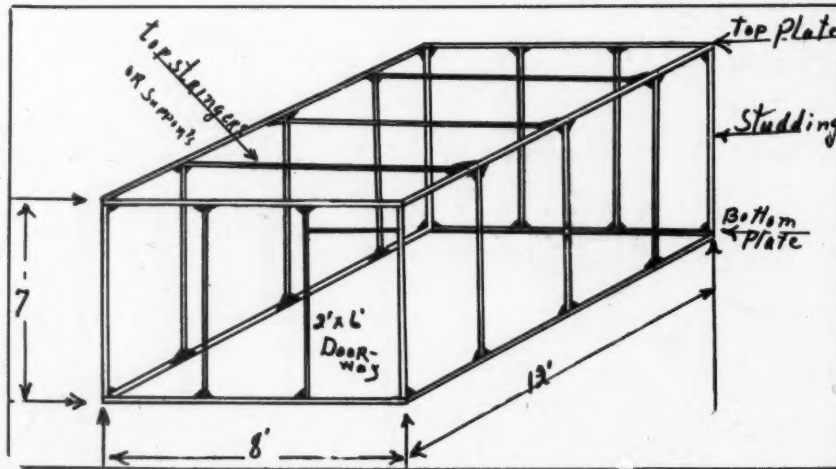
Sketch A, is constructed of 2 in. by 2 in. by $\frac{1}{4}$ in. galvanized steel angles, spaced at two foot centers. The size of the structure is usually 8 ft. wide by 12 ft. long by 7 ft. high, with top supports of the same material.

The estimator must keep in mind

twelve feet, it will require two bars 24 ft. long to produce the top and bottom plates without any waste. The width being eight feet, it will require five bars 20 ft. long, with the waste to produce the top and bottom end plates and the top supports or stringers.

sides of booth, held in position with weights. In between weights and these sliding doors a fusible link is placed so in case of fire the link will melt and the door closes from its

thirds feet at their longest measurements, so it will readily be seen that the estimator in figuring material for this elbow will have to make due allowance for the waste that occurs



Sketch B. Frame Work of Moving Picture Booth, 2x2¼-Inch Steel Angle Frame, Covered with 20-Gauge Galvanized Sheets

own weight. The floor is of concrete or sheet steel covered with asbestos.

The many small items must be estimated very carefully or the contractor will find that after he has completed a job he has lost money. By not giving due consideration to the amount of waste material that he is bound to have in building any structure where the specifications and requirements are so rigid, he will find that his estimate will not take care of the completed project. The wise plan is always to let the estimate cover the next largest size of standard stock sheet or bar than the actual measurement calls for, as we have in this case.

Estimating the Amount of Material Required for Elbows as Used in Smoke Pipe and Boiler Breeching

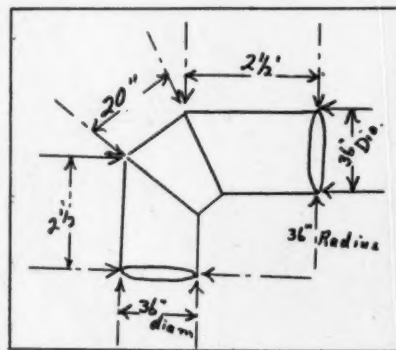
As an illustration for our problem today, we will use sketch A, showing a 3-piece, 90-degree elbow, 36 inches in diameter, and with a 36-inch radius.

Three and one-seventh times the 36-inch diameter gives a circumference of approximately 114 inches.

The heels of the elbow, as will be seen from the total measurements, are approximately six and two-

in this class of work, and also take into consideration the sizes of standard stock sheets available.

In this particular job a sheet at least 115½ inches long with end lap is required. However, since we want to use a standard stock sheet, the nearest we can come to this length is a standard sheet 120 inches



Sketch C. Estimating Materials for Smoke Pipe Elbow

long. It will take three of these sheets 120 inches long by 30 feet wide to produce this 3-piece elbow with its measurements of 6⅔ feet.

By making a number of elbows at the same time, and not being particular as to the number of parts in them, the waste can be greatly reduced. The gauge of steel to be used will depend upon any special condition to be met.

"Vic" Hain Goes with Premier as Factory Superintendent

The Premier Warm Air Heater Company, Dowagiac, Michigan, has appointed Victor W. Hain factory superintendent to succeed Clint Voohees, who resigned recently.

Mr. Hain has had a thorough schooling in the warm air heating and stove industries. He started with the Beckwith Company, also of Dowagiac, back in 1911 and remained with that firm until 1915. When the Rudy Furnace Company was organized he went with that company as assistant superintendent and continued there until 1917.

He then left Dowagiac and took a position as superintendent of the Marshall Furnace Company. From there he went to the Clinton Stove & Furnace Company, where he remained until 1922. The Bergstrom Stove & Furnace Company invited him to come to their plant for the purpose of modernizing it, and he remained with that firm until 1926, when he went to the plant of the Hamilton Foundry & Machine Co.

Therefore, it is felt that he brings to the Premier organization a wide and well-rounded experience in handling foundry problems.

A. Elbling & Sons, Pontiac, Mich., Incorporates for \$25,000

The Secretary of State of Michigan has granted a \$25,000 corporation franchise to A. Elbling & Sons, 73-75 South Parke Street, Pontiac, Michigan. This firm does a sheet metal, roofing and warm air heating business and have been at their present location for eighteen years.

The incorporators are: President and Treasurer, A. Elbling; Vice President, Ben B. Elbling; Secretary, Alex. J. Elbling.

Milwaukee Office Inland Steel Moved

Inland Steel Company's Milwaukee, Wisconsin, district sales office will be removed from the Majestic Building to the Bankers Building, 84 East Wisconsin Avenue, on May 1st.

**"Tony" Howe Becomes President and General Manager
J. M. & L. A. Osborn Co.**

At a meeting of the Board of Directors, held April 19, J. T. Hagan was appointed a director of the J. M. & L. A. Osborn Company, Cleveland, Ohio, to fill the unexpired term of J. T. Reichert who resigned recently as an officer and a director of the company.

The Board of Directors of the company also elected the following officers: President and General Manager, A. W. Howe; Vice President, D. A. Hossler; Secretary, J. W. Harrison; Treasurer, W. E. Lutton, re-elected.

Messrs. Howe, Hossler, Harrison and Lutton have been with the company 25 years or more.

Mr. Hagan was formerly Cleveland district salesman for the American Rolling Co., Middletown, Ohio.

**McGraw Now Represents
Midland Furnace Co.
in Ohio**

D. A. McGraw will represent the Midland Furnace Co., in Western Ohio. Mr. McGraw has been associated with the warm air industry for twenty-five years and has a correct and clear understanding of all the problems that are before all of us in this industry. He will live in Columbus, Ohio.

That company now has a warehouse in Atlanta, Georgia. This will be in charge of Glenn Holford who is also a large retailer in Atlanta, having pioneered that district on good warm air heating for years.

**Zinc Sulphate Bath Helpful
in Making Paint Adhere to
New Galvanized Iron**

Jack Stowell, Aurora, Illinois, asked for information on how to get paint to stick to new galvanized iron, and the William Conners Paint Manufacturing Company, Troy, New York, answers his query as follows:

"Through the courtesy of AMERICAN ARTISAN Query Department we are pleased to give you the following information which will be most helpful to you in the difficulty which you are having:

"New galvanized iron has a very smooth surface, that offers no pores or pits into which a paint can penetrate or obtain mechanical anchorage. Further difficulty is also encountered in painting unweathered galvanized iron which is due to the lubricant used on the rolls in the course of its manufacture, as the thin grease film on the surface of the finished sheet prevents adher-

The Convention Committee of the National Association of Sheet Metal Contractors, as a part of the work of getting as large an attendance as possible at the Baltimore convention in June, has sent out stickers to be pasted to all mail envelopes. They urge the use of these envelope stickers by manufacturers who send mail to sheet metal contractors in any part of the country.

The committee and the Baltimore local has been working hard to make the Baltimore convention the most successful ever held. The success they have will depend entirely upon the attendance at the convention. So if you have not received a supply of these stickers from the chairman, write to W. A. Fingles, Lord Baltimore Hotel, Baltimore, Maryland, and he will send them to you.

ence by not allowing the paint vehicle to wet the surface of the metal.

"This weather can be supplemented to good advantage by a cleaning and etching treatment and the most practical method of obtaining a cleaned and etched surface in a single operation from a surface contaminated with grease is to apply liberally with an oil free brush a mixture of 3 per cent zinc sulphate which may be prepared approximately as follows:

"Five ounces zinc sulphate to one gallon of warm water, which should be prepared only as required for use.

"After the reaction is complete

and the surface is dry, wash and rinse with clean water to remove the soluble salts, allow the surface to dry and then apply a coat of American Seal ready mixed paint."

**Kleen Heet Oil
Burner Catalog and
Educational Manual**

Warm air furnace installers who are giving thought to the advisability of taking on oil burners for installation in connection with warm air furnaces will be interested in knowing that the Winslow Boiler & Engineering Company, 844 Rush Street, Chicago, manufacturers of Kleen-Heet oil burners, have recently issued an attractive folder on the new developments in oil heat and some modern ideas of house heating in general.

The brochure is not the least bit technical in its exposition, but is designed to give those interested an opportunity to acquire knowledge about oil heating that they can use in their selling efforts.

In addition to this information about oil heating, a portion of the work is given over to questions which the home owner can ask himself about the heating of home. Answers are supplied with many of these questions, so that the furnace installer by studying them can anticipate to a large extent the sales resistance he is going to come up against.

A copy of this booklet will be sent to warm air furnace installers upon written request being made to the company and address given above.

**Saginaw Sheet Metal
Men Hear Biddle
Plan Outlined**

The Saginaw Sheet Metal and Roofing Contractors' Association gathered at the Fordney Hotel and partook of a wonderful chicken dinner recently, such as no one but "Miss Fordney" can prepare. Nearly a 100 per cent attendance greatly increased the pep and enthusiasm of the meeting.

Following the meal President Art Lange called the business meeting to order and proceeded with the reg-

ular routine of business. This being the first meeting since the Flint convention the first subject for discussion was the "Biddle Plan of Credit for the Building Industry" which was outlined during this meeting. Everyone was very much impressed with the plan and are "hot" to get started in Saginaw.

It now looks as though this city will be the first outside of Detroit to be operating under the plan. Andrew Lewless was appointed a committee of one to convene with C. M. St. Johns, president of the General Contractors' Association, to arrange a general meeting of the building industry of Saginaw. When such livewires as Andy Lewless and Charlie St. John start to do a thing it is as good as done. This general meeting will undoubtedly be held within the next thirty days.

Some months ago a committee was appointed to arrange for a dinner party for the ladies and up to this time the committee was dormant, so Art Lange appointed Jack Mallack and A. Klopff to succeed the other and instructed them to take immediate action. Undoubtedly the ladies will benefit from this action and will be honored with a dinner and entertainment in the very near future.

**S. S. Rand, Formerly
with Pexto, Now
Director, McCaffrey File**

S. S. Rand, formerly affiliated with the Peck, Stow & Wilcox Company, Southington, Connecticut, and Cleveland, has been made vice-president and director of sales of the McCaffrey File Corporation, Philadelphia. He succeeds the late Frank Gould.

Mr. Rand for seven years has been sales manager in the small tool and builders' hardware department of the Peck, Stowe & Wilcox Company, Southington, Connecticut.

TANGENT TEE

(Concluded from Page 160)
which gives 1'-2'-3', etc., in pattern. Free hand lines are sketched through each intersection, and the outline for pattern is finished.

To develop the pattern for open-

ing we pick the girth as 1'-2'-3', etc., to 7' from "A" and set it as 1"-7" in pattern for opening. Draw stretchout lines and from each point in plan miter line as 2'-3'-4', etc., square a point or line over into stretchout. Or use dividers to transfer lines, and you have the points for sketching in the outline of pattern. Edges for assembling must be allowed extra.

**Detroit Sheet Metal and
Roofing Contractors
Hold Dinner-Dance**

Just about one year ago the First Annual Ladies' Night was held by the Detroit Sheet Metal and Roofing Contractors' Association and it proved such a successful event that Bill Busch, some time ago, appointed a committee consisting of Bill Amelung, Bill Rettenmeir and Al Berschbach, Jr., to arrange for the "Second Annual Dinner Dance." This party was held Tuesday evening, April 16th, in the Crystal Ball Room of the Book-Cadillac Hotel and was even a greater success than the first.

One hundred and forty people including members, their wives and guests, enjoyed a full course dinner during which singing, music and specialty dances by the Wolverine Quartet and the "Oliver Girls Novelty Band" furnished plenty of entertainment.

Following a splendid dinner Al Berschbach, Jr., master of ceremonies, called upon Bill Busch for a few remarks. Bill in his talk thanked the members of the committee for so capably handling all the arrangements for the party and also announced that there is no doubt now of the popularity of the ladies' night and assured everyone that another would be held next year. Bill then introduced the speaker of the evening, a representative of the Board of Commerce, who gave a very interesting talk on the activities of this Board. After listening to this address everyone was convinced that the Board has a very active part in the prosperity of the city of Detroit.

The out of town guests included Mr. and Mrs. H. F. Bundage, Kala-

mazoo, Mr. and Mrs. I. Lammers, and Mr. and Mrs. D. H. Ederle, Grand Rapids, were introduced by the master of ceremonies. A round-table introduction of all present followed.

Dancing and plenty of it kept full pep by many circle dances continued until nearly one o'clock in the morning. During this Mert Allen favored the crowd with a saxophone solo and all members present who attended the recent convention harmonized on "Rye, Rye, Oh Give Us a Drink of Old Rye."

Bill Amelung, who was chairman of the entertainment committee, was, unfortunately, unable to arrive until real late in the evening, but upon his arrival he gave a very nice speech and to show the appreciation of the committee for the assistance received from Mrs. Wm. Busch in arranging the party he presented Mrs. Busch with a beautiful basket of flowers.

About one o'clock the orchestra became tired out from the strenuous evening and out of courtesy to them the party ended.

**Sheet Metal Supplies Company,
Louisville, Moves to New and
Larger Quarters**

The Sheet Metal Supplies Company, of Louisville, Kentucky, of which Louis C. Heck is manager, is moving to new and larger headquarters at 671 South 31st Street, Louisville. It is expected that the company will be in its new quarters by the 1st of May. They have erected a new building and will carry a complete stock of sheet metal supplies for their customers.

WARM AIR PUBLICITY

(Concluded from Page 153)

erally becomes thoroughly sold on what can be done in this respect, the competitive systems of heating are going to be dislodged from their seats of apparent supremacy, and warm air heating will be inaugurated as *The* heating system for those discriminating folks who have concern for healthy, humid heat. Let us hasten the day by the application of constructive thought to the problem.

DINGLE ON ACCOUNTING*(Concluded from Page 159)*

percentage in his own business.

Each separate business is complete within itself to a great extent and should compile its own figures of operations. There is a great deal of value in compiling these figures according to the plan adopted by your industry, in order that you may be able to compare your operating results with those of others in your industry, and thereby determine your efficiency, or lack of efficiency.

By the use of a uniform accounting system, designed for and adopted by your own industry, you and the others in your industry can better determine the actual operating conditions in your line of endeavor, and produce annual figures from a large number of separate businesses, which, when averaged, would be of great benefit to the individual members of your industry.

One of the greatest mistakes the average small business man makes, particularly in an industry similar to yours, is to assume that because he is not paying the high rent that his competitor is, he can undersell him. The little man may argue that he himself actually works, which is another great saving, and that helps him to undersell his larger competitor. The little man, however, does not take into consideration that the volume of business done has a great deal to do with the amount of rent paid, or the actual work done by the boss.

If the little man pays \$25.00 per month rent on his shop and does a business of \$250.00 per month, his rent is equal to 10 per cent of his sales. The bigger man may pay \$100.00 per month rent and do a business of \$1,000.00 per month, and he, too, has a rent expense of 10 per cent of his sales. But suppose the big man pay \$100.00 per month rent and does a business of \$2,000.00 per month; then he has a rent charge of 5 per cent of his sales, and is actually doing business on a cheaper rent than the little fellow who pays but \$25.00. It is also a reasonable presumption that the larger business man, who de-

votes his time to the procuring of business and superintending the work of his employees, does a much larger volume of business than the little fellow who gets a job and does it himself.

Everything depends upon the volume of business done. Like the rent, one may have more actual expenses in dollars and cents and still show a smaller expense content in his sales dollar. This matter of the small business man, who considers his expenses as being so much less than his larger competitor, thereby enabling him to undersell the big fellow is not what it at first appears.

In my previous talks, and to a great extent today, I have tried to drive home the necessity of good accounting records. The activities of your business have been shown as a mad racing around of your dollars, first one place and then another; now material and labor, tomorrow an unfinished job, and the next day a charge against the customer.

You have been told that it is the bookkeeper's job to keep up with these varying forms in which your money appears. The plan of accounts as sent you some days ago considers the activities of your business in sufficient detail to enable you to keep a good clear record of your financial activities. There remains the task of getting a good start—that is, opening your books in such a manner as to show just what your present condition is, and then instructing your bookkeeper in the keeping of the records as they should be. If you will do this, it will be possible for you and all of your fellows in this convention to know the average results in your industry, and also to compare your own operations with the average of the industry, and thereby determine wherein you are not getting results.

As to the simplicity of keeping books on your business, using a properly designed plan of accounts. If you had a bullfrog whose feet were inked after each jump, you would have no difficulty in tracing that frog all over the house. His

footprints would show for themselves. When all of the activities of a business have been considered in the planning of a set of accounts for that business, and a description of the different accounts has been prepared, there is but one thing needed, and that is a method of tracing these activities.

Instead of inking the frog's feet after each jump, we provide a system of journals, in which the bookkeeper records each move of the business, sorting it according to the nature of the move, and at the close of each month there is available such figures as will tell you just what your business has done during the period.

J. F. Hahn Becomes Vice President National Enameling and Stamping

Alfred J. Kieckhefer, president of the National Enameling & Stamping Company, Inc., has announced two important appointments.

These are appointments of J. F. Hahn as vice president and treasurer in charge of finance; Thomas W. Gulley, vice president in charge of sales.

Mr. Gulley's appointment will be of particular interest to the trade because of his very wide acquaintance throughout the entire country. His association with the company extends over a long period of years, starting with the Baltimore branch, through the position of assistant sales manager at that branch, and then transferred to Milwaukee to the executive offices as general sales manager, from which position he now steps to that of vice president in charge of sales.

New Paper Money Not to Circulate Until July 1, 1929

The new money of the United States government, which will be only two-thirds the size of the present bills, will not be put into circulation before July 1, 1929, according to a statement issued by J. E. Swigart, Acting Director of the Bureau of Engraving and Printing.

WHO'S WHO, WHERE!

DETROIT, MICH.—Wenzel Koch, Inc., 224 Harding Avenue, has been incorporated with a capital of \$10,000, and will handle roofing, sheet metal and ornamental metal.

PONTIAC, MICH.—A. Elbling & Sons, 73 South Parke Street, have incorporated their sheet metal products business under the same name, with a capital of \$15,000.

ABERDEEN, WASH.—A. R. Dunn has sold out his sheet metal business to L. J. Bratt and the business has been incorporated with a capital stock of \$3,000, by L. J. Bratt and E. P. Antus.

PORTLAND, ORE.—The Fire-O-Matic, Inc., engaged in the furnace business, has increased its capital stock to \$200,000.

The F. & W. Furnace Co. has been incorporated with a capital of \$50,000, by F. H. Charais, F. A. Wilke and W. T. Finnigan.

DES MOINES, IA.—Harry A. Mueller, a heating engineer of Sioux City, has been made local manager for the Green Foundry & Furnace Works.

John H. Albrecht, who recently sold the business of the Des Moines Steel Tank Co., is organizing the Des Moines Steel Building Co., and will have a factory and offices at 2007 Mattern Avenue.

ST. PAUL, MINN.—Harry Wahl, 133 East Curtice, has the furnace heating contract for shelter building in Highland Park.

The Capital City Roofing & Cornice Works, 517 University Avenue, has been awarded roofing contract for court house at Aitkin, Minn.

MINOT, N. D.—Oliver & Uleberg are about to build \$2,800 addition to their tinning and sheet metal shop.

CEDAR RAPIDS, IA.—Ilten & Taeger, 325 4th Avenue, W., have the warm air heating contract for residence of Frank Whitters.

DAVENPORT, IA.—R. Claussen, 617 W. 2nd Street, has been awarded the warm air heating contract for residences of McInnis Bros.

BEATRICE, NEB.—Ira Lock has the warm air heating contract for residences of Claude Saum and Alfred Huttenmaier.

BEATRICE, NEB.—The Rawlinson Heating Co. has the warm air heating contract for residences of Floyd Fitzwater and John Mahlock.

BELLINGHAM, WASH.—J. M. Laube & Son, 1208 State Street, has sheet metal and roofing contract for Leopold Hotel.

OAKLAND, CAL.—E. W. Anderson, 3103 San Pablo Avenue, has been awarded sheet metal contract for warehouse of California Packing Corp., in Fruitvale, Cal.

E. W. Anderson, 3103 San Pablo Avenue, has the sheet metal contract for warehouse of City Title Insurance Co., in Oakland.

STOCKTON, CAL.—The Fraser Gas Furnace Co., 445 S. San Joaquin Street, is taking bids on construction of \$40,000 factory building.

SANTA ROSA, CAL.—Ed Holtz has been awarded the sheet metal work for the school gymnasium at that point.

HUNTINGTON PARK, CAL.—The Berg Heating & Ventilating Co., 742 Laura Avenue, has been awarded the heating and ventilating contract for Palace Theater, in Long Beach, Cal.

LOS ANGELES, CAL.—Emil Brown Co., 300 E. Ninth Street, has been awarded sheet metal contract for Junior High

School at Pomona, Cal., and also for the boys' dormitory building at Pomona College, at Claremont.

SAN DIEGO, CAL.—W. H. Emcke has the sheet metal work contract for the Normal Heights school building in that city.

LOS ANGELES, CAL.—The A. A. Sheet Metal and Cornice Works has engaged in business at 1933 East 2nd Street under the management of John R. Ransdell.

Hulse & Moreau have engaged in the heating and ventilating business at 1491 West Washington Street.

CLINTON, IA.—C. E. Armstrong & Son will do the sheet metal work on the bath house at River Front Park, that city.

The Edward Katzinger Co., Chicago, has let the contract for construction of \$150,000 tinware plant in Baltimore, Md.

HOUSTON, TEX.—The building occupied by the J. F. Miller tin shop was damaged by fire to the extent of \$45,000.

WASHINGTON, D. C.—J. D. Thompson Co., 2609 Pennsylvania Avenue, N. W., has been awarded the sheet metal contract, and the Campbell Metal Window Corp. the metal window contract for \$10,000,000 bureau of internal revenue building.

MACON, GA.—The Phillip Carey Co. has the roofing and sheet metal contract for U. S. Veterans' Hospital building, Oteen, N. C.

CHICKASHA, OKLA.—Frank Branding has the roofing and sheet metal contract for Cames & Chandler hotel building in Clinton, Okla.

YOUNGSTOWN, OHIO.—The Youngstown Success Heater Company has been formed by M. A. Nell at 315 Willis Avenue and will do general sheet metal work and install warm air heating equipment. Mr. Nell has had unusual success in installing furnaces according to the Standard Code method and will carry the Success line of furnaces.

SEATTLE, WASH.—The Gebro Sheet Metal Manufacturing Company has sold its property to Frank Parket, 149 West Spokane Street.

The Oil Heat Engineering Corporation has been chartered with a capital of \$100,000 to engage in the heating equipment business by L. R. Stradley and Alpheus Byers.

A tin shop is to be included in the new addition to the high school, to be 36x125 feet, for teaching electrical and sheet metal work.

WINONA, MINN.—The Quality Sheet Metal Works has been organized by Harold Ofenloch and W. O. Flemming, and a shop has been opened at 108 Center Street.

HELENA, MONT.—The Helena Sheet Metal Works has been awarded contract for enclosed spiral type of fire escape for high school building.

SPOKANE, WASH.—The Wheeler Sheet Metal Works, North Division Street, has been awarded the warm air heating contract for five residences of Ray G. Ward.

AVON, N. Y.—The Sheet Metal & Roofing Craftsmen have let the contract for construction of 2-story shop to cost about \$50,000.

LOS ANGELES, CAL.—H. H. Robertson has been awarded the sheet metal contract for Continental Can Company factory building.

The California Cornice Works has the

sheet metal contract for Hill Brothers office and warehouse building.

Paller & Goldstein, 2883 West Pico Street, have been awarded the sheet metal contract for the Arthur I. Rouda apartment building.

Emil Brown & Company, 300 East Ninth Street, have the sheet metal contract, and the California Fireproof Door Company the tin-clad door contract, for Chapman Brothers warehouse.

The J. Herman Company, 1349 East Vernon Avenue, has been awarded the contract for ventilating system for the Beverly Hills School.

SAN FRANCISCO, CAL.—The Ace Sheet Metal Works, 444 Clementina Street, has let the contract for construction of a warehouse at 250 West Fifth Street, to cost \$4,000.

DES MOINES, IA.—The Backman Sheet Metal Company, 405 East Second Street, was the low bidder for sheet metal work for the hospital here.

SAN ANTONIO, TEX.—Sam Dean, 902 Waverly Street, has been awarded sheet metal contract for \$2,000,000 Alamo National Bank building.

NEWTON FALLS, OHIO.—The Fram Heating & Spouting Company, 23 Broad Street, has been organized by H. F. Fram. Mr. Fram will conduct a general sheet metal and warm air heating shop.

OTTUMWA, IOWA.—The Ottumwa Heating & Sheet Metal Works, 1417 East Main Street, has been awarded the contract for the sheet metal work on the new St. Patrick's parish school in that city. This firm recently completed the construction and erection of a sheet metal hair trough 450 feet long for the John Morrell & Company packing plant in that city.

SAN FRANCISCO, CAL.—The Novelty Sheet Metal & Furnace Works has moved from 808 McAllister Street to 1072 Golden Gate Avenue.

TRAVERSE CITY, MICH.—Arms & Cole, engaged in the sheet metal and plumbing business at 122 Cass Street, have incorporated their business under the same name, with a capital of \$36,000.

JACKSON, MICH.—The Jackson Furnace & Foundry Co., Hobart Street, has increased its capital stock from \$35,000 to \$50,000.

CLE ELUM, WASH.—The Haines Plumbing & Tinning Shop has been opened by C. F. Haines.

TACOMA, WASH.—The Service Electric Welding & Sheet Metal Co. has been adding \$1,585 worth of new equipment.

SEATTLE, WASH.—The Pacific Sheet Metal Manufacturing Co., heating and ventilating, has been incorporated, with a capital of \$5,000, by Nema Hofstedt and G. A. Smith.

BURNS, ORE.—Corley Allen and William Spencer have engaged in the heating and sheet metal business.

SIoux CITY, IA.—The Norfolk Furnace Co., East 8th and Division, has the warm air heating contract for the residence of Mayer Harrison.

PITTSBURGH, PA.—The American Sheet & Tin Plate Co., Frick Bldg., has begun erection of a 80x600-ft. warehouse and machine shop at Vandergrift, Pa.

SAN FRANCISCO, CAL.—Morrison & Co., 75 Duboce Avenue, have the sheet metal contract for the industrial building of L. A. Myers.

RANDOM NOTES AND SKETCHES

Mrs. Ray Taylor, whose husband is with Forest City-Walworth Run Foundry Company, was in Chicago on Tuesday of this week and paid us a visit. Mrs. Taylor certainly is easy to look at in addition to having a charming personality.

* * *

A certain blonde some years ago introduced J. C. Miles to a brunette. They all conversed a few minutes and after Miles left, the blonde asked the brunette what she thought of him.

"Well, you know, I always say that short men are either 'cute' or 'cocky' and I don't like either kind."

Miles proved himself a pretty good salesman in spite of that brunette's remark, for she is now Mrs. Miles.

* * *

If A. C. Tinker of Tinker Heating Specialty Company, Conneaut, Ohio, doesn't get a laugh out of this one I'll buy him a convention cigar. Come on, "Tink," fess up.

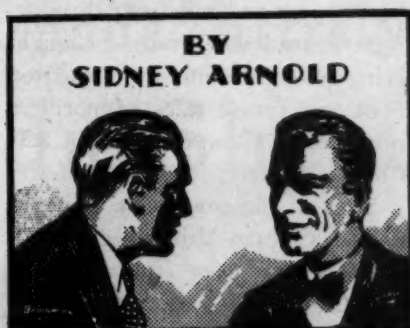
Sambo: "Yes, suh, business ben fine. Mah wife done gib me ten dollars an' Ah bought a pig. Ah kept tradin' fo' eberything under de sun, till finally Ah gets a bicycle, an' Ah sold it fo' ten dollars."

Rastus: "But you all doan' make any money."

Sambo: "Co'se not. But look at de business Ah's been doin'!"

* * *

From the reproduction of the dude in distress you will gather that American Artisan is moving its headquarters to 139 North Clark Street to the 21st floor of the City Hall Square Building. I hope that all my friends who have from time to time paid me the honor of a call will continue to do so in the future. This places our location directly across the street to the east from



the City Hall and in a much better position to help our friends when they get into difficulties in the big city. I hope you all note that I haven't changed my red flannel "undies" yet.

*This moving is sure hard on the back!
I wish I had called on BILL AMELUNG, PETE LORENZ, JIM TRIGGS, R. JESKE and a few other big huskies to help me!*



First Singer (after finishing duet): "Say, have you got an ear for music?"

Second Singer: "Why, of course I have!"

First Singer: "Well, the next time that you sing with me, make the music come out of your ear. That noise from your mouth was terrible!"

* * *

Alberf F. Fink of Philip Fink & Sons, Louisville, Kentucky, will get a big "kick" out of this story.

A negro woman walked into an insurance office and asked whether they dealt in fire insurance.

"We do," a clerk replied. "What do you want insured?"

"Mah husband."

"Then you don't want fire insurance," smiled the clerk as he reached for another application form. "What you want is a life insurance policy."

"No, Ah don't," exclaimed the woman. "Ah wants fire insurance. Mah husband been fired fo' times in de las' two weeks."

* * *

He: "What's that clicking sound coming from the next room, honey?"

She: "It's the man taking moving pictures of your proposal in case I have to sue you for breach of promise."

* * *

A Fruit Tree in Disguise

A girl shows her raisin when she makes a date with a prune for whom she doesn't care a fig. She may be a peach, but they make a funny pear. She may be the apple of his eye, but she hands him a lemon, although she may have a cherry disposition. It is plum wrong and if her name be Anna he ought to ban Anna. By this time he would realize his efforts had been fruitless.

Steel Demand, Output Drop Gently

Backlogs and Bookings, However, Insure Good Quarter—Mills Enter Repair Period—Plate Demands Heavy—Semifinished Up—Little Iron Sold

BY EASY stages steel demand is receding from its recent record level. Specifications of important producers are averaging 75 to 80 per cent of shipments, a relationship which is unusually good for the season and, considering backlogs, substantiates expectations of a record second quarter output.

By districts Chicago is an exception to this trend, as bookings of most products show little change, and by producers subsidiaries of the United States Steel Corporation are in a slightly better position than independents both as to operating rates and new business.

Seasonal shifts in requirements are taking up some slack. Whatever shrinkage develops in automotive sheet consumption in the next sixty days, for example, will be substantially offset by expanding needs of container manufacturers.

Pig iron sellers at Pittsburgh are obtaining orders for small lots but are meeting with fair success in their attempts to establish an advance of 50 cents a ton on all grades, now in effect in the asking prices of all producers.

Demand for foundry iron is the most active and aggregates several thousand tons of the No. 2 grade, all reported placed at \$18.50, base, valley, at which level this grade is fairly well established.

One order for 800 tons, understood to have been closed at \$18, is said to have been placed prior to the recent advance. Some sales of bessemer are noted at \$19 valley, but the tonnage is small.

Malleable iron is quiet.

Shipments of northern pig iron continue heavy at Chicago. Furnace interests do not expect to be able to stock iron in any quantity for some time, but are able to meet current delivery needs. Spot orders are exceeding expectations.

Shipment on one order of south-

ern iron placed in this district will be by barge and rail from Birmingham, instead of all-rail. Selling is being extended into third quarter. Spot and future sales of northern iron are steady on the basis of \$20, Chicago furnace, for base grades.

Sales of pig iron to be delivered to the Chicago-Milwaukee district from eastern lake furnaces total 25,000 to 30,000 tons, including one shipment to replace a cargo lightered last season.

Silicon differentials are being waived on these orders, making the price of the boat iron here 50 to 75 cents under the Chicago base furnace price. The market, however, is undisturbed by these sales, or those of southern iron below \$15.50, base, Birmingham. Northern iron shipments this month are slightly ahead of those of March.

The pig iron market at Birmingham is quiet. Shipments have fallen below output and furnaces are accumulating stocks. Home consumption is less active than it has been.

A little iron is going outside the district, but not the tonnage anticipated. Four producers of foundry iron here declare their price is firm at \$15.50, base, Birmingham. However, sales have been made at \$15 for shipment to distant territory.

Copper was a little more active in the past week. The price has remained at the 18-cent level since the close of business April 15.

Copper

The business at the 18-cent level has been done almost entirely by custom smelters. Other producers have participated only in a most limited way, as they still are well sold. Most of the latter continue out of the market entirely. Export sales have been relatively quiet, but a fair amount of buying remains to be done for shipment in May and June. The trend of prices will depend largely on how soon this buy-

ing is done. Domestic buying in the past week has been for all positions from April to August. It is believed that very little buying remains to be done for shipment prior to July.

Zinc

Buying of prime western has been almost negligible the past week with a result that a very small tonnage of metal pressed on the market has sent prices down to a current range of 6.50c to 6.60c, East St. Louis. Some smelters are holding for 6.80c, which means that they are well booked and out of the market for the time being. Users appear to be covered on needs for this month and next, and have done much of their buying for June shipment, as well as some for July. Producers are very well booked through May, and some of them beyond.

Tin

The price of Straits fell from 45.62½c a week ago to 43.62½c on Saturday. It then recovered but again became weak and uncertain. For a number of months the market has had artificial support from powerful producing and speculative interests in London. Even with such support prices here barely held their own, so that in the past few weeks without such support they broke rapidly. Consumption is unusually large but output continues to exceed it. The market is approaching the season when consumption usually tapers off, but there is no sign that output will be cut. Since the beginning of the year prices have fallen from 50 cents, and in the past few days have been down to prewar levels.

Lead

The market has held relatively well in the past week with a moderate amount of buying, mostly for May shipment. Lead has appeared to be a little more firmer than other metals. Some buying remains to be done for May requirements.

Largest Copper Cylinder Ever Shipped by Rail

is made entirely of

Anaconda Sheet Copper

Plant of the Ansonia Copper and Iron Works, Cincinnati, Ohio, where the great copper cylinder was fabricated.



Largest copper cylinder ever fabricated and shipped by rail in this country. Made entirely of Anaconda Sheet Copper by the Ansonia Copper and Iron Works, Cincinnati, Ohio.

WHEN the Ansonia Copper & Iron Works of Cincinnati set out to make what is probably the largest copper cylinder ever formed in this country and shipped by rail, they selected Anaconda Sheet Copper.

Nine sheets of Anaconda Cold Rolled Copper, each 133 inches wide, 195 $\frac{1}{4}$ inches long and $\frac{1}{4}$ of an inch thick, and two Anaconda Cold Rolled Copper Circles of similar gauge, 133 inches in diameter, were used in the fabrication of this mammoth copper tank. The tank, when completed, measured 10 feet 6 inches in diameter by 51 feet in length and weighed 21,000 pounds.

Anaconda Sheet Copper is produced by the world's largest and most experienced manufacturer of Copper, Brass and Bronze, and is widely known for its uniform quality and easy workability. Back

of every sheet of Anaconda Copper produced in the mills of The American Brass Company is the technical knowledge and manufacturing skill accumulated in more than a century's experience.

Anaconda Copper is supplied in the form of Sheets, Rolls and Economy Strips, and is sold by leading metal distributors in all parts of the country. Large stocks at convenient locations assure prompt and dependable service. For further information apply to The American Brass Company, General Offices, Waterbury, Connecticut.

Sheet Metal Work of
ANACONDA COPPER



Look for the name ANACONDA in every sheet and strip • Leading Supply Houses carry it

Say you saw it in AMERICAN ARTISAN—Thank you!

Pure Iron Durability
A Story Of
Protective Sheet Metals
Past and Present

INGOT-IRON SHOP
Quality Work with Quality Iron

STOP Paying Tribute to RUST!
Rusty, leaking drainage parts... here is an annoying experience that we can save you, for many years to come... with rust-resisting ARMCO Ingot Iron. Please us if it's anything in sheet metal.

YOUR NAME AND ADDRESS HERE

"An Iron and a Yard Wide"

Water Foms This Fire!

Simplified System of Cost Accounting and Bookkeeping for Sheet Metal Shops

Fundamentals of Blue Print Reading for Sheet Metal Shops

These Help You Sell ARMCO Ingot Iron

IT will pay you to send these leaflets out with your bills, letters, or to your own mailing lists. They will tie your business in with ARMCO'S great advertising campaign.

Ingot Iron Shop Contractors, Salem and North, write from Dayton, Ohio: "We are glad to tell you we have doubled our ARMCO Ingot Iron business... this success is greatly due to the use of your advertising services..."

This is one of the many ways that the ARMCO Distributor's Association cooperates with you, and gives you the benefit of its large organization. A special department devotes its entire time to working up advertising plans for Ingot Iron Shops. They will help you prepare advertising copy, direct mail letters, window displays, set up cost systems—anything that will help you build a large and successful business.

LIGHT ON YOUR RUST PROBLEMS

Life Lines

S CARD
ing ARMCO Ingot
itters and down
to put on a new
es clean.

HIS SIGN

IRON
IP -

Printed in U.S.A.

THE ARMCO DISTRIBUTORS'

Executive Offices:

Say you saw it in **AMERICAN ARTISAN**—Thank you!

Any of these *members* will be glad to serve your needs

Albany, N. Y.
James Ackroyd & Sons
The Albany Steel & Iron Supply
Company, Inc.

Atlanta, Ga.
Conklin Tin Plate & Metal Co.

Baltimore, Md.
Arnold & Co.

Birmingham, Ala.
The George F. Wheelock Co.

Boston, Mass.
Brown-Wales Co.
Richards Co., Inc.

Bridgeport, Conn.
The Chapin & Bangs Co.

Buffalo, N. Y.
The J. M. & L. A. Osborn Co.
The Republic Metalware Co.

Cambridge, Mass.
Lamb & Ritchie Co.

Chattanooga, Tenn.
National Metal Products Co.

Chicago, Ill.
Milwaukee Corrugating Co.
The Republic Metalware Co.

Cincinnati, Ohio
Ferdinand Dieckmann Co.
Follansbee Bros. Co.
The F. H. Lawson Co.

Cleveland, Ohio
The J. M. & L. A. Osborn Co.

Columbus, Ohio
F. O. Schoedinger
Vorys Brothers, Inc.

Dallas, Texas
Moncrief-Lenoir Mfg. Co.

Dayton, Ohio
The F. H. Lawson Co.
The Ohio Metal & Mfg. Co.

Des Moines, Iowa
Luthe Hardware Co.

Detroit, Mich.
Follansbee Bros. Co.
The J. M. & L. A. Osborn Co.

Fall River, Mass.
The Congdon & Carpenter Co.

Fort Smith, Ark.
Hammond Sheet Metal Co.

Harlingen, Texas
Moncrief-Lenoir Mfg. Co.
Peden Iron & Steel Co.

Harrisburg, Pa.
York Corrugating Co.

Hartford, Conn.
The Blodgett & Clapp Co.

Houston, Texas
Moncrief-Lenoir Mfg. Co.
Peden Iron & Steel Co.

Huntington, W. Va.
Banks-Miller Supply Co.

Indianapolis, Ind.
Follansbee Bros. Co.
The Standard Metal Co.

Kansas City, Mo.
Milwaukee Corrugating Co.
Townley Metal & Hardware Co.

Knoxville, Tenn.
C. M. McClung & Co.

La Crosse, Wis.
Milwaukee Corrugating Co.

Lewiston, Me.
Brown-Wales Company

Los Angeles, Calif.
California Cornice Works, Inc.
Tay-Holbrook Co., Inc.

Louisville, Ky.
The Conner Mfg. Co.
Follansbee Bros. Co.

Memphis, Tenn.
Follansbee Bros. Co.
Pidgeon-Thomas Iron Co.

Milwaukee, Wis.
Follansbee Bros. Co.
Milwaukee Corrugating Co.

Minneapolis, Minn.
Farwell, Ozmun, Kirk Co.

Mobile, Ala.
Turner Supply Co.

Nashville, Tenn.
Follansbee Bros. Co.

Newark, N. J.
James A. Coe & Co.
Mapes & Sprowl Steel Co.

New Haven, Conn.
Brown-Wales Co.
The C. S. Mersick & Co.

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Inc.

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Cook Corp.
The Republic Metalware Co.

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Dunham, Carrigan & Hayden
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Ceco Steel and Wire Co.

Peoria, Ill.
Ceco Steel and Wire Co.

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W. F. Potts, Son & Co., Inc.

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McClure-Johnson Co.
Follansbee Bros. Co.

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E. Corey & Co.

Portland, Ore.
Jacobs & Gile

Providence, R. I.
Brown-Wales Co.
The Congdon & Carpenter Co.

Richmond, Va.
Gordon Metal Co.

Rochester, N. Y.
Follansbee Bros. Co.

Sacramento, Calif.
Tay-Holbrook Co., Inc.

St. Louis, Mo.
Hammond Sheet Metal Co.

St. Paul, Minn.
Farwell, Ozmun, Kirk & Co.

Salt Lake City, Utah.
Strevell-Paterson Hdwe. Co.

San Antonio, Texas
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Peden Iron & Steel Co.

San Francisco, Calif.
The American Rolling Mill Co.
of California
Dunham, Carrigan & Hayden Co.
Tay-Holbrook Co., Inc.

Savannah, Ga.
Conklin Tin Plate & Metal Co.

South Bend, Indiana
The Ometco Supply Co.

Terre Haute, Ind.
Braden Mfg. Co.

Washington, D. C.
York Corrugating Co.

Waterbury, Conn.
The Henry Weyand Co.

York, Pa.
York Corrugating Co.

Toronto, Ont., Canada
Wheeler & Bain, Ltd.

Montreal, Que., Canada
Robert W. Bartram, Ltd.

Vancouver, B. C., Can.
McLennan, McFeeley & Prior,
Ltd.

Victoria, B. C., Can.
McLennan, McFeeley & Prior,
Ltd.



ASSOCIATION OF AMERICA

Middletown, Ohio

Chicago Warehouse Metal and Furnace Supply Prices

AMERICAN ARTISAN is the only publication containing Western Metal, Furnace Supply and Hardware prices corrected weekly

METALS

PIG IRON

Chicago Fdy.,	
No. 2	\$20 00
Southern Fdy. No. 2	21 51
Lake Superior Charcoal	27 04
Malleable	20 00

FIRST QUALITY BRIGHT CHARCOAL TIN PLATES

IC	20x28 112 sheets	\$22 50
IX	20x28	15 50
IXX	20x28 56 sheets	14 50
IXXX	20x28	15 50
IXXXX	20x28	17 00

TERNE PLATES

		Per Box
IC	20x28, 40-lb. 112 sheets	\$26 70
IX	20x28, 40-lb. 112 sheets	29 70
IC	20x28, 25-lb. 112 sheets	22 20
IX	20x28, 25-lb. 112 sheets	25 20
IC	20x28, 20-lb. 112 sheets	20 25
IV	20x28, 20-lb. 112 sheets	23 00

"ARMCO" INGOT IRON PLATES	
No. 8 ga.—100 lbs.	\$4 15
3/16 in.—100 lbs.	4 05
1/4 in.—100 lbs.	3 85

COKE PLATES

Cokes, 30 lbs., base, 20x28	\$12 00
Cokes, 90 lbs., base, 20x28	12 20
Cokes, 100 lbs., base, 20x28	12 40
Cokes, 107 lbs., base, 1C	
20x28	12 75
Cokes, 135 lbs., base, 1X	
20x28	14 75
Cokes, 155 lbs., base, 2X,	
56 sheets	8 50
Cokes, 175 lbs., base 3X,	
56 sheets	9 25
Cokes, 195 lbs., base 4X,	
56 sheets	10 25

BLUE ANNEALED SHEETS

Base 10 ga.—per 100 lbs.	\$3 25
"Armco" 10 ga.—per 100 lbs.	4 15

ONE PASS COLD ROLLED BLACK

No. 18-20	per 100 lbs. \$3 60
No. 22	per 100 lbs. 3 75
No. 24	per 100 lbs. 3 80
No. 26	per 100 lbs. 3 90
No. 28	per 100 lbs. 4 05
No. 29	per 100 lbs. 4 20
No. 30	per 100 lbs. 4 30

"ARMCO" GALVANIZED

"Armco" 24	per 100 lbs. \$6 15
------------	---------------------

GALVANIZED

No. 16	per 100 lbs. \$4 15
No. 18	per 100 lbs. 4 30
No. 20	per 100 lbs. 4 45
No. 22	per 100 lbs. 4 50
No. 24	per 100 lbs. 4 65
No. 26	per 100 lbs. 4 90
No. 27	per 100 lbs. 5 00
No. 28	per 100 lbs. 5 15
No. 30	per 100 lbs. 5 55

BAR SOLDER

Warranted 50-50 per 100 lbs.	\$32 75
48-52	per 100 lbs. 32 00
45-55	per 100 lbs. 30 75
Plumbers'	per 100 lbs. 28 75

ZINC

In Slabs	\$ 7 35
----------	---------

SHEET ZINC

Cask Lots (600 lbs.)	\$11 75
Sheet Lots	\$12 75

BRASS

Sheets, Chicago base	24 1/4 c
Mill base	23 1/4 c
Tubing, brazed, Chicago base	31 1/4 c
Mill base	30 1/4 c
Tubing, seamless, Chicago	
base	29 1/4 c
Mill base	28 1/4 c
Wire, Chicago base	24 1/4 c
Mill base	23 1/4 c
Rods, Chicago base	22 1/4 c
Mill base	21 1/4 c

COPPER

Sheets, Chicago base	27 1/4 c
Mill base	26 1/4 c
Tubing, seamless, Chicago	
base	31 1/4 c
Mill base	30 1/4 c
Wire, plain rd., 3 B. & S. Ga.	
and heavier	25 1/4 c

LEAD

American Pig	\$ 8 00
Bar	9 00

TIN

Bar Tin	per 100 lbs. \$51 00
Pig Tin	per 100 lbs. 50 00

HARDWARE, SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES.

ASBESTOS

Paper up to 1/16	6c per lb.
Roll board	6 1/4 c per lb.
Mill board 3/32 to 1/4	5c per lb.
Corrugated Paper (250 sq. ft. to roll)	\$6 00 per roll

BRUSHES

Furnace Pipe Cleaning	
Bristle with handle each	\$0 75
Flue Cleaning	
Steel only, each	1 25

CEMENT, FURNACE

American Seal, 5-lb. cans, net	\$ 45
American Seal, 10-lb. cans, net	85
American Seal, 25-lb. cans, net	2 25
Pecora	per 100 lbs. 7 50

CHIMNEY TOPS

Adams' Revolving	Wt. Doz.	Price Doz.
4 in.	21 lbs.	\$11 00
6 in.	24 lbs.	11 50
7 in.	30 lbs.	13 50
8 in.	33 lbs.	15 00
9 in.	51 lbs.	16 50
10 in.	56 lbs.	18 00
12 in.	66 lbs.	22 00
14 in.	110 lbs.	36 00

CLINKER TONGS

Each	\$1 50
------	--------

CLIPS

Damper	
No-Rivet Steel, with tail	
pieces, per gross	\$9 50
Rivet Steel, with tail	
pieces, per gross	7 50
Tail pieces, per gross	2 40

COPPERS—Soldering

3 lb. and heavier	per lb. 40c
2 1/2 lb.	per lb. 45c
2 lb.	per lb. 48c
1 1/2 lb.	per lb. 55c
1 lb.	per lb. 60c

CORNICE BRAKES

Chicago Steel Bending	
Nos. 1 to 6B	Net

CUT-OFFS

Gal., plain, round or cor. rd.	
26 gauge	20%
28 gauge	35%

DAMPERS

"Yankee" Hot Air	
7 inch, each 20c, doz.	\$1 60
8 inch, each 25c, doz.	2 20
9 inch, each 30c, doz.	2 80
10 inch, each 35c, doz.	3 40
Smoke Pipe	
7 inch, doz.	\$1 60
8 inch, doz.	2 20
9 inch, doz.	3 00
10 inch, doz.	3 75
12 inch, doz.	4 50

ADAMS No. 1 CHECK

Check and Collar Complete	
8 inch, each	2 00
9 inch, each	2 25
End Check Only	
8 inch, each	1 60
9 inch, each	1 85
Collar Only	
8 inch, each	50
9 inch, each	65

No. 2 CHECK

8 inch, each	1 00
9 inch, each	1 00
10% Disc. on Adams No. 1	
and No. 2 Check	
Diamond Smoke Pipe	
7 inch, doz.	\$2 00
8 inch, doz.	3 20
9 inch, doz.	4 30
10 inch, doz.	6 00

Adams' Sheet Metal

7 inch, doz.	\$1 60
8 inch, doz.	2 20
9 inch, doz.	2 60
10 inch, doz.	2 80
12 inch, doz.	3 50
14 inch, doz.	5 00

EAVES TROUGH

Galv. Crimpedge, crated	50%
Zinc, "Barnes"	60%

ELBOWS

Conductor Pipe	
Galv. plain or corrugated, round flat Crimp,	
28 Gauge	60%
26 Gauge	45%
24 Gauge	15%

Galv. Terne Steel	
Plain Rd. and Rd. Corr.:	
28 Ga.	60%
26 Ga.	45%
24 Ga.	15%

Square Corrugated	
No. 28 Gauge	50%
26 Gauge	35%

Portico Elbows	
Standard Gauge Conductor Pipe, plain or corrugated.	
Not nested	70 & 5%
Nested Solid	70 & 5%

Sq. Corr., A. & B. & Octagon	
28 Ga.	50%
26 Ga.	35%

Portico	
1", 1 1/4", 1 1/2"	45%

Copper	
16 oz., all designs	50%

Zinc—	
All styles	60%

ELBOWS—Stove Pipe

1-piece Corrugated, Uniform Blue "Milcor" No. 28 Gauge, Doz.	\$1 15
5-inch	1 15
6-inch	1 25
7-inch	1 75

Special Corrugated

6-inch	\$1 00
7-inch	1 60

Adjustable—Uniform Blue

"Milcor" No. 28 Gauge, Uniform Blue,	
5-inch	\$1 60
6-inch	1 75
7-inch	2 10

WOOD FACES—60% off list.

FENCE

726-6-12 1/4 (100 rods)	\$38 68
1948-6-14 1/4 (100 rods)	43 63

FILES AND RASPS

Heller's (American)	50-10%
American	60-10%
Arcaide	50%
Black Diamond	50%
Eagle	50%
Great Western	50%
Kearney & Foot	50%
McClellan	50%
Nicholson	50%
Simonds	60%

FIRE POTS

Geo. W. Diener Mfg. Co.	Es.
No. 02 Gasoline Torch, 1 qt.	\$ 5 13
No. 9250, Kerosene, or Gasoline Torch, 1 qt.	6 50
No. 10 Tinner's Furn.	
Square tank, 1 gal.	11 30
No. 15 Tinner's Furn.	
Round tank, 1 gal.	10 70
No. 21 Gas Soldering Furnace	8 60
No. 110 Automatic Gas Soldering Furnace	10 50

GALVANIZED WARE

Pails (Galv. after made), 10-qt.	\$2 00
Tubs (Galv. after made), No. 1	5 75
No. 2	6 50

GLASS

Single Strength, A, all brackets	85%
Single Strength, B, all brackets	87%
Double Strength, A, all brackets	85%
Double Strength, B, all brackets	87%

HANGERS

Conductor Pipe	
Milcor Perfection Wire	25%
Milcor Triplex Wire	10%
Eaves Trough	
Milcor Steel (galv. after forming) from List	10%
Milcor Selflock E. T. Wire, List	plus 50%

HOOKS

Conductor	
"Direct Drive" Wrought Iron for wood or brick	15%

HUMIDIFIER

"Front-Rank," Automatic	
In single lots	50%
In lots of 10 or more	50-5%
In lots of 25 or more	50-10%
Vapor pans, etc., each	50%

LIFTERS

Steve Cover	
Coppered	per gro. \$6 00
Alaska	per gro. 4 75

MALLETS

Tinners	
Hickory	per doz. \$3 25

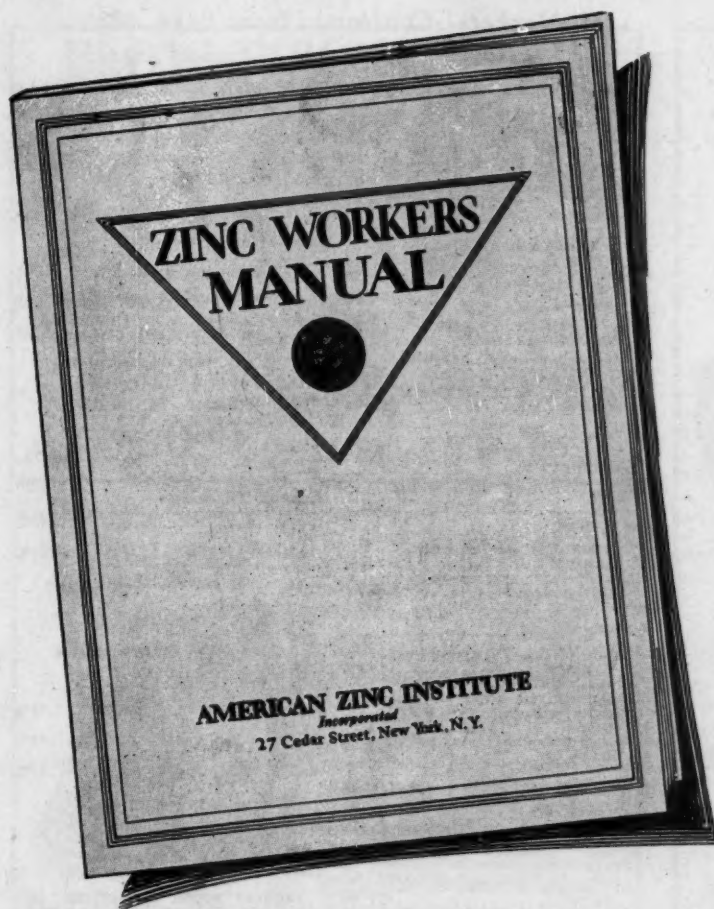
MITRES

Galvanized steel mitres	
28 Ga.	70
26 Ga.	60-80

NAILS

Cut Steel, base	\$4 00
Wire	
Common	\$3 10
Cement Coated	\$ 16

(Continued on page 174)

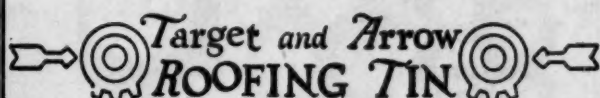


THE INSTITUTE'S
LATEST PUBLICA-
TION AND A MOST
AUTHORITATIVE
TREATISE ON THE
USES OF AND SPECIFI-
CATIONS FOR ROLLED
ZINC.

\$1.50 per copy
(Foreign, \$1.65)

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AMERICAN ZINC INSTITUTE
Incorporated
27 CEDAR STREET, NEW YORK, N. Y.

A Good Tin Roof means a roof made of



IF your prospective customer knows as much about tin roofing as you do he will specify Taylor's, but if he doesn't he will leave it up to you or price.

That's the time for you to tell him that **TARGET and ARROW** is the highest quality, longest lived roofing tin in the world.

Made by an old Welsh hand-dipped process—soaked for 35 minutes in successive pots of palm oil and molten metal.

**SOLD BY DISTRIBUTORS IN
ALL PARTS OF THE COUNTRY**

N. & G. TAYLOR COMPANY
Broad and Arch Streets Philadelphia

Headquarters for Good Roofing Tin Since 1810

YORKSHIRE SHINGLE



The
Roofer
Should
Know

HOW TO BUY

ROOFING TILE

Reasonable competitive prices are now possible by insisting on bids from competitive roofing tile manufacturers.

The progressive roofer is realizing handsome profits through tile installation.

All countries of the world make their roof tile exclusively from clay except the United States, where so much shale has been used with the result that roof tile in the United States imitates sheet metal painted red or painted green.

The B. Mifflin Hood Company makes roof tile from both clay and shale and are trying to give the trade true architectural tiles like Old Europe that have vegetated and aged to soft tones instead of jazzy, glass-like colors.

Insist on Competitive Bids

B. MIFFLIN HOOD CO.
DAISY, TENNESSEE

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FASTE		RIDGE ROLL	
Asbestos Dry Paste:		Galv., Plain Ridge Roll,	
200-lb. barrel.....	\$14 00	b'dld.....	75-16-5%
100-lb. barrel.....	7 50	Galv., Plain Ridge Roll	
50-lb. pall.....	4 25	crated.....	75-16
10-lb. bag.....	1 00		
5-lb. bag.....	55		
2½-lb. cartons.....	25		
POKERS, FURNACE		SCREWS	
Each.....	\$0 75	Sheet Metal	
POKERS, STOVE		7, ½x½, per gross.....	\$0 53
Nickel Plated, coil handles,		No. 10, ¾x3/16, per gross.....	68
per doz.....	1 10	No. 14, ¾x½, per gross.....	83
W'r't Steel, str't or bent,			
per doz.....	\$0 75		
PIPE		SHEARS, TINNERS' & MACHINISTS'	
Conductor		Viking.....	\$22 00
Cor. Rd., Plain Rd., or Sq.		Lennox Throatless	
Galvanized		No. 13.....	35%
Crated and nested (all		Shear blades.....	10%
gauges).....	75-7¼%	(f. o. b. Marshalltown, Iowa)	
Crated and not nested			
(all gauges).....	75-2¼%		
Furnace Pipe		SHIELDS, ADJUSTABLE RADIATOR	
Double Wall Pipe and		No. 1 "Gem" 11" to 17".....	30%
Fittings.....	60%	No. 2 "Gem" 14" to 24".....	30%
Single Wall Pipe, Round		No. 3 "Gem" 35" to 65".....	30%
Galvanized Pipe.....	60%		
Galvanized and Tin Fit-			
tings.....	60%		
Lead		SHOES	
Per 100 lbs.....	\$12 50	Galv. 28 Gauge, Plain or cor-	
Stove Pipe		rugated round flat crimp.....	60%
"Milcor" "Titelock" Uniform Blue		26 gauge round flat crimp.....	45%
Stove		24 gauge round flat crimp.....	16%
28 gauge, 5 inch U. C.			
nested.....	11 00		
28 gauge, 6 inch U. C.			
nested.....	12 00		
28 gauge, 7 inch U. C.			
nested.....	14 00		
30 gauge, 5 inch U. C.			
nested.....	10 25		
30 gauge, 6 inch U. C.			
nested.....	11 00		
30 gauge, 7 inch U. C.			
nested.....	13 00		
T-Joint Made up		SNIPS, TINNERS	
6-inch, 28 ga....per doz.....	\$ 40	Clover Leaf.....	40 & 10%
All Size		National.....	40 & 10%
No. 11, all styles.....	80%	Star.....	50%
		Milcor.....	Net
PULLEYS		SQUARES	
Furnace Tackle.....per doz.....	\$0 85	Steel and Iron.....	Net
.....per gro.....	8 50	(Add for bluing \$3 per doz. net)	
Furnace Screw (enameled)		Mitre.....	Net
.....per doz.....	75	Try.....	Net
		Try and Bevel.....	Net
		Try and Mitre.....	Net
		Fox's.....per doz.....	\$6 00
		Winterbottom's.....	10%
PUTTY			
Commercial Putty, 100-lb.			
Kits.....	\$3 50		
QUADRANTS			
Malleable Iron Damper.....	10%		
REDUCERS—Oval Stove Pipe			
Per Doz.			
7-8, 28-gauge, 1 doz. in			
carton.....	\$2 00		
REGISTERS AND BORDERS			
Baseboard, Floor and Wall			
Cast Iron.....	20%		
Steel and Semi-Steel.....	33¼%		
Baseboard, 1 piece.....	33¼-30%		
Baseboard, 2 piece.....	33¼%		
Wall.....	33¼%		
Adjustable Ceiling Ventilators			
.....	33¼%		
Register Faces—Cast and Steel			
Japanned, Bronzed and			
Plated, 4x6 to 14x14.....	33¼%		
Large Register Faces—Cast,			
14x14 to 38x42.....	50%		
Large Register Faces—Steel,			
14x14 to 38x42.....	60%		
Ventilating Register			
Per gross.....	\$ 00		
Small, per pair.....	30		
Large, per pair.....	50		

BLOW PIPE FITTINGS



Gates from 2" to 18"

BALL JOINTS FROM 2" TO 12"

USE Blast Gates on all your Blow Pipe Jobs. They will reduce power and increase suction if gates are closed on machines not in operation.

USE BALL JOINTS ON MOVABLE CUTTER HEAD CONNECTIONS

Prompt Shipments—Write for Price List

ALFRED C. GOETHEL CO. 833 31st ST., MILWAUKEE, WIS.

The NEW IMPROVED

"STANDARD"

TRADE MARK REG.

Rotable Ventilator

Now made of Armco Iron



This favorite cone-shaped ventilator is now improved in several important points.

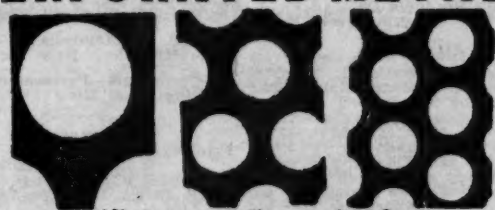
The weight of the ventilator body is now carried on a concave thrust bearing nested in the apex of the conical body. This bearing turns upon the pivot point of the stationary center spindle.

The bronze Guide Bushings are now made of non-corrosive bronze which minimizes friction and any tendency to screech when body is rotating.

There are other new features. Write today for new catalog and price list.

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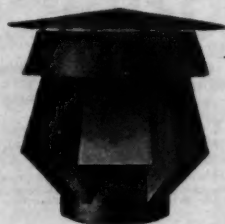
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Chicago, Ill.

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Milwaukee, Wis.

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Alfred C. Goethal Co.,
Milwaukee, Wis.

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Lamson & Sessions Co.,
Cleveland, Ohio
Ryerson & Son, Inc., Jos. T.,
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Brakes—Cornice.
Dreis & Krump Mfg. Co.,
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Copper & Brass Research As-
sociation, New York

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Osborn Co., The J. M. & L. A.,
Cleveland, Ohio

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Fanner Mfg. Co., Cleveland, Ohio

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Stover Mfg. & Engine Co.,
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sociation, New York

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Youngstown, Ohio

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Acclue-Dickinson Co., Chicago, Ill.
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Quincy, Ill.
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Foundries Co., Cleveland, Ohio
Milwaukee Corrugating Co.,
Milwaukee, Wis.

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American Furnace Co.,
St. Louis, Mo.

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Brillion Furnace Co., Brillion, Wis.
Canton Furnace & Mfg. Co.,
Canton, Ohio

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Emrich Co., C., Columbus, Ohio
Farris Furnace Co.,
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Massillon, Ohio
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Linde Air Products Co.,
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Gas (Oxygen).
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Independent Reg. Co.,
Cleveland, Ohio

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Chicago, Ill.

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Handles—Soldering Iron.
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Milwaukee, Wis.

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Machinery—Culvert.
Bertsch & Co.,
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Machines—Tin Smith's.
Bertsch & Co.,
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Chicago, Ill.

La Salle Machine Works,
Chicago, Ill.

Maplewood Machinery Co.,
Chicago, Ill.

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Osborn Co., The J. M. & L. A.,
Cleveland, Ohio

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Chgo., N. Y., St. L., Det., Cleve.

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Friedley-Voshardt Co.,
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Linde Air Products Co.,
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Minneapolis, Minn.

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Troy, N. Y.

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Quincy Pattern Co.,
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(Continued on page 178)

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(Continued from page 176)

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Osborn Co., The J. M. & L. A., Cleveland, Ohio

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Friedley-Voshardt Co., Chicago, Ill.
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New Jersey Zinc Sales Co., The, New York, N. Y.
Wheeling Corrugating Co., Wheeling, W. Va.

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Sall Mountain Co., Chicago, Ill.

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Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

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Connors Paint Mfg. Co., Wm., Troy, N. Y.

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Tuttle & Bailey Mfg. Co., Chicago, Ill.

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Beh & Co., Inc., New York, N. Y.

Ranges—Combination Gas & Coal.
Thatcher Co., Newark, N. J.

Register Shields.
Beh & Co., Inc., New York, N. Y.
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Auer Register Co., Cleveland, Ohio
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Tuttle & Bailey Mfg. Co.,
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Waterloo Register Co., Waterloo, Iowa

Registers—Wood.
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Auer Register Co., Cleveland, Ohio
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
Mueller Furnace Co., L. J., Milwaukee, Wis.

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National Regulator Co., Chicago, Ill.
H. M. Sheer Co., Chicago, Ill.
Thermo-Control Regulator Co., Youngstown, Ohio

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Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

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Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
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Wheeling Corrugating Co., Wheeling, W. Va.

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Roofing—Zinc.
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Hart & Cooley Co., New Britain, Conn.

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Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
Viking Shear Co., Erie, Pa.

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Taylor Co., N. & G., Philadelphia, Pa.
Wheeling Corrugating Co., Wheeling, W. Va.

Sheets—Iron.
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Taylor Co., N. & G., Philadelphia, Pa.

Sheets—Zinc.
New Jersey Zinc Sales Co., The, New York, N. Y.

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Diener Mfg. Co., G. W., Chicago, Ill.

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Snips.
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Chicago Metal Mfg. Co., Chicago, Ill.

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Tools—Tinsmith's.
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Maplewood Machinery Co., Chicago, Ill.
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For Sale—Sheet metal, furnace and built-up roofing business in progressive Illinois town of 6,000. An established business that will pay a tinner \$400 a month on a very small investment. Must sell in order to take care of larger investment in another point. A real proposition. Will stand strictest investigation. Geo. P. Tomlinson & Son, Salem, Illinois. K497

Growing sheet metal shop in Portland, Oregon, wants experienced man to invest \$3,000 or more, with services. Blow pipe, furnace, and general sheet metal work. Practical mechanic or estimator and superintendent wanted. Address R498, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

For Sale—Hardware, plumbing and sheet metal shop. Good tools and clean stock. Building 24 by 36. Seven room house and bath. Two miles from Milton Lake. Sewer and water going in now. Plenty of work. This is priced to sell. Address H. F. Cain, Diamond, Ohio. A498

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Experienced furnace salesman will be open May 1st for position; thoroughly familiar with Standard Code; can help dealers on installation. Special attention given to school and church jobs. Acquainted with most of the best dealers in Wisconsin. Furnish best of references. Address 745 47th street, Milwaukee, Wisconsin. P-498

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Sheet metal worker, 31 years old, married, would like steady job with a good heating and sheet metal firm in good town. Especially good on furnace, trough and gutter work, some oil burner installation and service experience. Address P497, AMERICAN ARTISAN.

Tinner and furnace installer wants place with good live Hardware Store in Middle West States. Can do plumbing, draft own patterns and figure furnace installation. Neat and accurate workman, no boozier. Can come at any time. Address R497, AMERICAN ARTISAN.

Situation wanted by tinner and furnace man and general handy man around country hardware store. Can also do pump work and some plumbing. Address 616 Manomin Avenue, St. Paul, Minnesota. O-498

A first class hardware man, capable of taking charge and running the business, seeks position with a reliable company. Address G. O. Crouch & Son, Chattanooga, Tennessee. M-498

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Wanted—Combination sheet metal worker and plumber. Must be A-1 mechanic. Prefer middle-aged married man who is able to handle all kinds of work required in a small country town of 1,000 population. A steady job for the man with ambition. Unless you are sober, honest, industrious, and steady don't waste your time answering this ad. Address L497, AMERICAN ARTISAN.

Wanted—Experienced sheet metal man to invest \$2,000 or more, with services, in growing and well established power shop in Portland, Oregon, doing a general sheet metal, furnace, blow pipe and roofing business. A good opportunity for right man. Address M497, AMERICAN ARTISAN.

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Wanted—Experienced man to canvass and sell nationally known furnaces, both cast and steel, and sheet metal work in all its branches, in Chicago vicinity. State wages expected and when you could commence, in first letter. Address O497, AMERICAN ARTISAN.

Wanted—Old established business wants manager who understands heating, ventilating and sheet metal work. Salary and commission. Best city on Pacific coast. Seattle, Washington. Address C498, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

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For Sale—Full set of tinner's tools. Everything needed to do a general sheet metal business. Will sell cheap for cash. Write for particulars and price. G. B. Fadner, 607 J Avenue West, Cedar Rapids, Iowa. Z497

Wanted—Riveting machine that will handle 14 gauge corrugated culverts and lighter; must be in first class condition. Address Wendland Sheet Metal Works, 30 West Concha Avenue, San Angelo, Texas. H-498

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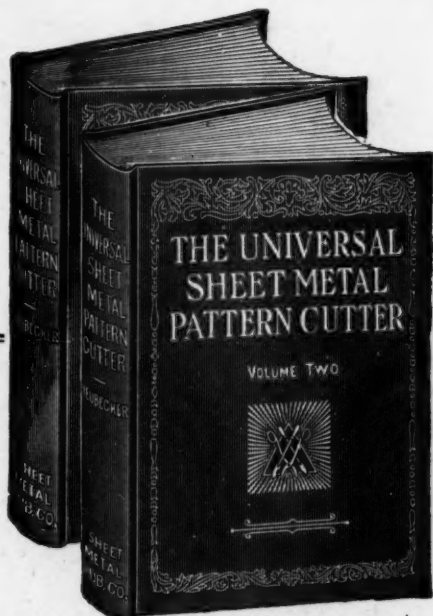
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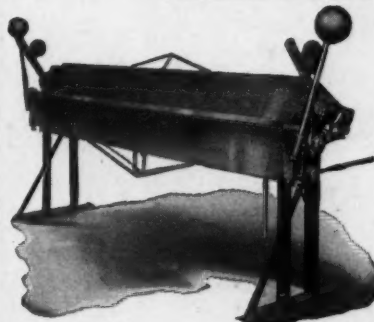
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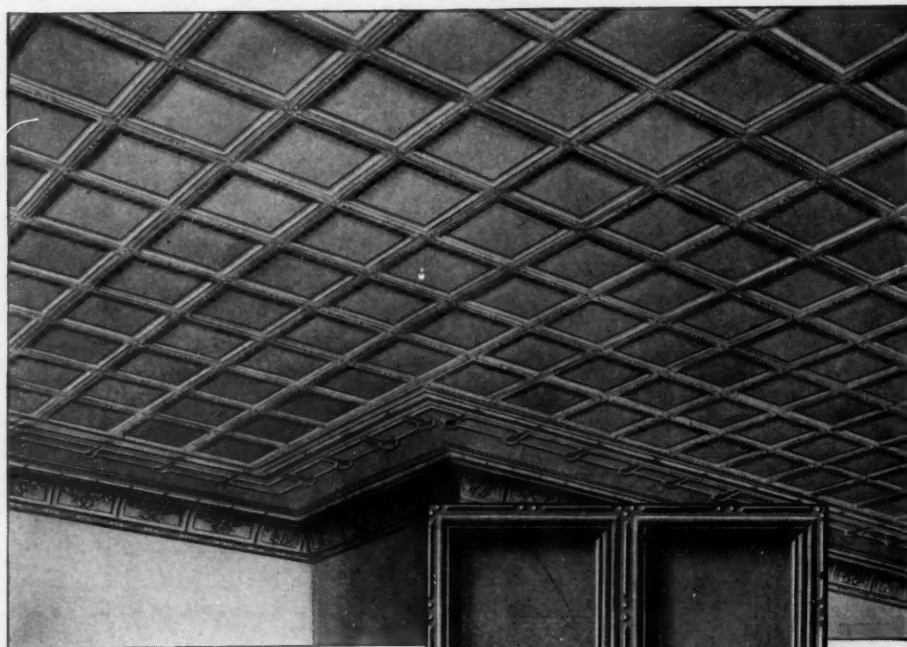
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